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APPLICANT'S NAME MYLES, S., HARRINGTON, PITTSBURGH, PA; DANIEL J. VERES, PITTSBURGH, PA; ROBERT M. PANOFF, DURHAM, NC.								EXAMINER			
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PROVISIONAL APPLICATION COVER SHEET

11/1997

A request for filing a PROVISIONAL APPLICATION under 37 CFR 1.53(b)(2).

Attorney's Docket No. <u>2810-970801</u>		Type a plus sign (+) inside this box →
INVENTOR(s) /APPLICANT(s)		
LAST NAME, FIRST NAME, MIDDLE INITIAL		RESIDENCE (CITY AND EITHER STATE OR FOREIGN COUNTRY)
<u>Harrington, Myles C.S.</u> <u>Veres, Daniel J.</u> <u>Panoff, Robert M.</u>		<u>Pittsburgh, Pennsylvania</u> <u>Pittsburgh, Pennsylvania</u> <u>Durham, North Carolina</u>
TITLE OF THE INVENTION (280 characters max)		
<u>Process for Conducting Auctions Over Electronic Networks</u>		
CORRESPONDENCE ADDRESS		
<u>Webb Ziesenhein Bruening Logsdon Orkin & Hanson, P.C.</u> <u>700 Koppers Building, 436 Seventh Avenue</u> <u>Pittsburgh, Pennsylvania 15219-1818, United States of America</u> <u>Telephone No.: (412) 471-8815, Facsimile No.: (412) 471-4094</u>		
ENCLOSED APPLICATION PARTS (check all that apply)		
<input checked="" type="checkbox"/> 21 Number of Pages in Specification and claims <input type="checkbox"/> Small Entity Statement <input type="checkbox"/> Number of Sheets of Drawing(s) <input checked="" type="checkbox"/> Other (specify) <u>Exhibits 1-16 and A-4</u>		
METHOD OF PAYMENT (check one)		
<input checked="" type="checkbox"/> A check or money order is enclosed to cover the Provisional filing fees (\$150.00 Large Entity; \$75.00 Small Entity). <input type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees required for filing this application to Deposit Account No. 23-0650. Please refund any overpayment in the form of a check. An original and two copies of this sheet are enclosed.		
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The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

No.

Yes, the name of the U.S. Government agency and the Government contract No. are: _____

Respectfully submitted,

SIGNATURE Michael I. Shamos

Date May 29, 1997

TYPED NAME Michael I. Shamos

Registration No. 30,424

Additional inventors are being named on separately numbered sheets attached hereto.

PROVISIONAL APPLICATION FILING ONLY

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF:

ATTORNEY'S DOCKET NUMBER

Myles C. S. Harrington et al.

2810-970801

5431 U.S.P.T.O.
60/047876
05/29/97

ENTITLED

"Process For Conducting Auctions Over Electronic Networks"

Box Provisional Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

EXPRESS MAIL CERTIFICATE

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Date of Deposit May 29, 1997

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PROCESS FOR CONDUCTING AUCTIONS OVER ELECTRONIC
NETWORKS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a method of conducting auctions, particularly municipal bond auctions, over electronic networks, particularly the Internet.

2. Description of the Prior Art

An auction is a prior art process in which bids from bidders are received by an auctioneer for an item to be sold. The bidder whose bid is the highest at the termination of the auction (the "successful bidder") becomes the purchaser of the item.

Auctions may be conducted in a variety of ways. The present invention concerns "silent real-time" auctions, in which bidders are made aware at all times of the magnitude of the current highest bid but do not know the identity of the highest bidder. So long as the auction is still in progress, the bidders may increase their bids. Silent real-time auctions generally end at a specific announced time and any bid submitted by that time is considered in determining the successful bidder.

Another style is the "public real-time" auction, in which bidders are made aware both of the current highest bid and the identity of the bidder. Public real-time auctions are conventionally held by open verbal outcry and are terminated by the fall of the auctioneer's hammer after warning is given to the bidders of the imminent close of the auction.

AUGUST 24, 2000

Other types of auctions are known. In a sealed-bid auction, bidders are given the chance to make one secret bid only. They do not know either the current highest bid or the identity of the current
5 highest bidder.

Yet other types of auctions differ from the foregoing in that offers to sell may be made by the auctioneer in decreasing price increments, the first buyer to accept a bid being the winner (a "Dutch flower auction"). In another type, the winner is the party who makes the highest bid, but he pays the amount bid by the second-highest bidder.
10

It is a drawback of the above types of auctions that the bidders must either gather together in the same physical location with the auctioneer or remain in contact with the auctioneer by telephone or video conference facility. Bidders who are in the physical presence of the auctioneer may have an advantage because they are able to respond to the auctioneer's reaction to a bid more readily than those at remote locations.
15

In the domain of municipal bond auctions, competitive bids for new municipal bond offerings are submitted to the issuer via fax machine or in person and qualified bids must be for all of the bonds in the issue ("all-or-none"). There is a fixed time (e.g. 10:30 a.m., EST) on a predetermined date ("sale date") that bids must be delivered to the issuer. Since bidders are sensitive to on-going interest rate movements in the capital markets while preparing their
20 bid, they prefer to wait until the last minute before submitting it in order to be as competitive as possible and avoid the risk that other bidders will learn the details of their bid before the deadline.
25

It is a drawback of fax auction methods that faxed bids are transmitted after the deadline, fax clocks are not set properly and record the incorrect time in fax headers, fax transmission interruptions outside the control of the sender and receiver and machine malfunctions such as paper misfeeds occur.

5

It is a drawback of in-person bidding methods that bidders have difficulty locating the place where bids are to be delivered or may experience traffic or other delays in submitting bids. Also, since the most frequent participants in competitive bids for new issues are located in New York City and the issuers are in other parts of the country, it is extremely difficult for bidders to deliver their bids in person.

10

It is a drawback of prior art bidding methods that bids are not submitted in conformity with issuers' specifications as set forth in a Notice of Sale or similar solicitation document. It is a drawback of fax bid methods that faxes may not be legible at the receiving end. These problems can create controversy between bidders and embarrass municipal officials and their financial advisors conducting auctions. They can also cost the issuer money, if the best bid has to be disqualified as a result of one of these malfunctions or mistakes.

15

20

Further drawbacks of prior art bidding methods are:

25

1. Bidders cannot see bids submitted by other bidders and are thus precluded from using this information to make their bids competitive;

2. Once having submitted a bid, a bidder is not given an opportunity to correct or improve its bid

in the event it does not conform in some way to the issuer's bid specifications;

5 3. Bidders cannot submit bids for selected bond maturities; bids must be "all-or-none"; meaning they must purchase every single maturity in the issue or none of them;

10 4. Regional and small underwriters are precluded from submitting bids because they do not have sufficient capital or desire to purchase every maturity in an issue;

15 5. Institutional investors and other bidders who are not underwriters do not submit bids because they desire only selected maturities rather than all of the bonds in an issue;

20 6. There is a delay after bids are submitted and before awarding a contract to the successful bidder because it is necessary for the issuer to transcribe the bids into a computer spreadsheet or other program that computes which bid is the best one; furthermore, it is usually necessary to resize the principal maturity amounts after determining the winning bid, which results in further delays before the sale is made;

25 7. There is no effective security mechanism to reassure issuers that bids submitted via fax are bona fide offers from qualified bidders;

30 8. There is no built-in safeguard that alerts bidders before submitting their bid when they attempt to make a bid which does not conform to the issuer's specifications (e.g., exceeding the issuer's premium or discount limitations, interest rate coupons which are not multiples of a preset percentage, etc.).

5 The prior art does not disclose a method of conducting municipal bond auctions mediated by computer in which the bidders may be distributed in different physical locations yet by which either a silent real-time auction or a public real-time auction may be conducted.

10 It is an object of the present invention to allow bidders from around the world to participate in a real-time auction simultaneously.

15 It is an object of the present invention to provide bidders with computational tools, such as spreadsheets, with which to compose their bids.

20 It is an object of the present invention to provide facilities for the auctioneer to receive and evaluate bids in real-time.

25 It is an object of the present invention to ensure anonymity in silent real-time auctions.

30 It is an object of the present invention to increase the speed at which bidders may bid so that the largest number of bids can be submitted prior to the close of an auction.

35 It is an object of the present invention to address the drawbacks of municipal bond auctions listed above.

40 Following are further objects of the present invention:

45 1. To replace bidding by fax;

50 2. To provide an integrated system running on a single server that:

55 a) allows bidders to prepare bids and submit them without transcribing them or using extraneous commercial software or equipment such as Bid Comp, Monroe Bond Calculators, Bond Buyer Worksheets, interfaces, etc.;

- b) enables issuers and financial advisors to view auctions in progress including winning bids and bidders;
- 5 c) automatically sends electronic confirmations of bidder admission to auction and winning bids;
- 10 d) to calculate true interest cost (TIC) of winning bid combinations and resize issue without requiring the Issuer or financial advisor to run separate software programs or customized spreadsheet programs;
- 15 e) permits the auction administrator to create, modify and view auctions in progress; and f) provides one on-line location where the Notice of Sale and POS can be viewed (and amended by the Issuer) to assist bidders in preparing bids;
- 20 3. To allow primary offerings of municipal bonds to be conducted as real-time auctions in which bidders can view the best bid for each maturity and are given the opportunity to make a better offer while the auction is in progress;
- 25 4. To obviate the need for special software or hardware installation at the bidders', or issuer's, locations by allowing bidders and issuers to use any personal computer, any Internet service provider and any web browser;
- 30 5. To allow bids to be submitted for selected bond maturities within a new issue, rather than exclusively on an all-or-none basis;
- 6. To allow an auctioneer to conduct multiple auctions simultaneously using the same web server and a single administrator;

7. To allow bidders to participate in a plurality of auctions simultaneously or consecutively;
8. To improve the security of auctions by providing bidders and other parties that access bidding information with electronic signatures via an identification number and password and to log all bids submitted by each bidder throughout an auction;
- 5 9. To obtain electronic verification from bidders that they have read and agree to certain legal documents associated with a bond issue, retaining their responses in a log, and if they answer "no" that they have not read the documents or do not agree with them, to deny said bidders access to the auction until they can answer "yes";
- 10 15. To provide a bidder with automatic notification via error message when bid does not conform to issuer's specifications in a Notice of Sale with a description of any non-conforming entry;
11. To provide a built-in official auction clock that keeps bidders informed of time remaining before the auction ends; and
- 20 25. To enable bidders to recalculate and refresh display of aspects of their bids, including calculated yield or prices associated with their entries before submitting them as formal bids.

SUMMARY OF THE INVENTION

A plurality of computers are provided that are connected to an electronic network. Each bidder is provided with a computer and the auctioneer is provided with a computer. The bidders' computers are

provided with software that communicates with the network. Auction terms and conditions, and a description of the goods to be auctioned, are broadcast or otherwise made available by the
5 auctioneer's computer to the bidders' computers. The auctioneer's computer broadcasts or otherwise makes available the current highest bid and, if desired, the identity of the current highest bidder.

10 Software on the bidder's computers guides the bidders through the bidding process and provides computational assistance in preparing their bids and comparing them to the current highest bid.

15 The bidder may prepare a tentative bid, review it and modify it before submitting it.

20 When a bid is "submitted", it is transmitted to the auctioneer's computer where it is compared with the current highest bid. If the submitted bid is higher than the current highest bid, it becomes the new current highest bid and is transmitted to all bidders.

25 At the close of the auction, the auctioneer's computer notifies the bidders' computers of the successful bid. The auctioneer's computer also maintains a bid history in which the time and amount of each submitted bid can be analyzed so that future auctions can be organized to provide the highest return to the auctioneer.

BRIEF DESCRIPTION OF THE EXHIBITS

30 Exhibit 1 shows the auctioneer's home page and associated HTML.

Exhibit 2 shows the Information Page and associated HTML.

Exhibit Nos. 3, and 7 are omitted.

Exhibit 4 shows the Selections Page and associated HTML.

5 Exhibit 5 shows a Notice of Sale in the form of a web page, with associated HTML.

Exhibit 6 shows a portion of the text of a Preliminary Official Statement.

Exhibit 8 shows the Registration Page and associated HTML.

10 Exhibit 9 shows the error page accompanying the Registration Page and associated HTML.

Exhibit 10 shows the Verification Page and associated HTML.

15 Exhibit 11 shows the error page accompanying the Verification Page and associated HTML.

Exhibit 12 shows the Auction Page and associated HTML.

Exhibit 13 shows a first error page accompanying the Auction Page.

20 Exhibit 14 shows a second error page accompanying the Auction Page.

Exhibit 15 shows the Observation Page and associated HTML.

25 Exhibit 16 shows Administration Pages and associated HTML.

Exhibit 17 is a commercial brochure describing the present invention.

Exhibit A-4 contains the source code of the present invention supporting the auctioneer's website.

30 Throughout the Exhibits, the service mark MuniAuction and trade name MuniAuction, Inc. will be seen to appear. These are proprietary names owned by

MuniAuction Inc., the assignee of the present invention. These names should be read in connection with the present invention as synonymous with "auctioneer".

- 5 Each Exhibit is numbered at the lower right corner of its first page.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

10 The present invention concerns municipal bond auctions, in which a municipality ("Issuer") offers its bonds to underwriters, who resell them to the public. The municipality desires to raise the greatest possible amount of money for its bonds and therefore desires a large number of competitive bidders. Bids in municipal bond auctions may be 15 complex because of the need to bid on a package of multiple bonds having differing principal amounts and maturity dates. Comparing one's prospective bid against the current highest bid involves more than a simple comparison of two numbers, and is difficult to 20 do rationally in real-time without computational assistance.

25 In a competitive bond sale, bonds are offered to underwriters ("bidders") by means of two official documents prepared by the Issuer: a Notice of Sale and a Preliminary Official Statement, ("POS" or "Prospectus"). The Notice of Sale describes the essential terms of the offering in detail. The POS describes the bonds being issued in detail, including such terms as the legal authority of Issuer to issue 30 them, description of the security being offered to purchaser, and the like. The terms of both the Notice

of Sale and the POS are essential to the preparation of a bidder's bid.

5 In a preferred embodiment, the auction is conducted by an auctioneer hired by the Issuer to solicit and receive bids.

10 In a preferred embodiment, the auctioneer is provided with a computer connected to the Internet and the auctioneer is provided with a website on the Internet through a web server that may be accessed by bidders.

15 In a preferred embodiment, each bidder is provided with a computer connected to the Internet and is provided with conventional web browsing software to obtain access to the auctioneer's website.

20 15 The bidder is presented with a series of screens to guide him through the bidding process. In a preferred embodiment the source code implementing these screens resides entirely in the auctioneer's computer and is downloaded as HTML to the bidder's computer as each screen is accessed. In an alternative embodiment, portions of the source code implementing certain features remains resident on the bidder's computer, e.g. in the form of applets written in the Java language.

25 25 The source code which supports operation of the auctioneer's web site is written in HTML (Hypertext Markup Language) and PERL 5. A listing of the source code is contained in Exhibit A-4.

30 30 As used below, the term "user" means any person who accesses the auctioneer's website, including the auctioneer, bidder, Issuer, Issuer's financial advisor or auction administrator. In a preferred embodiment, for security reasons each user

must make arrangements in advance with the auctioneer to receive an identification number ("ID") to obtain access to auction information and to enter or review bids.

5 The applicant's website can be accessed by any interested person using URL <http://www.muniauction.com>.

10 The bidder who "visits" the auctioneer's website is led through a sequence of web pages and may prepare and submit bids by typing entries and using conventional mouse clicks as in accessing a typical website.

15 The site's Home Page, (Exh. 1) offers three links, to (1) an Information Page; (2) a Registration Page; and (3) an Auction Page.

20 The "Information" Page, (Exh. 2) is a description of the electronic auction, why it is useful, how it works, its benefits to issuers and bidders, special features and where to call for an on-line demonstration.

25 The "Registration" Page, (not shown) contains a form to be completed by those interested in submitting bids. Such parties must register so that their credentials can be verified prior to issuance to them of security information enabling them to make legitimate bids. Registration is necessary to prevent unauthorized persons from interfering with, or obtaining information about, the auction.

30 The "Auction" link leads to the Selections Page (Exh. 4) from which a bidder may enter the auction.

 The Selections Page (Exh. 4) lists the bond auctions which are either in progress or anticipated

including name of issuer, state where issuer is located, a brief description of the bonds being sold, the size of the issue, the scheduled auction date and start time. Each possible auction is listed in proximity to a "radio button" which may be used by the bidder for selection. When an auction is selected, the bidder is provided with four linked options to choose from: (1) View Notice of Sale; (2) View POS; (3) View Rules of Auction; and (4) Enter Auction. Depending upon which issue is selected, the corresponding Notice of Sale and POS will be displayed when the desired button is clicked.

The "View Notice of Sale" link (Exh. 5) causes the complete text of the Notice of Sale to be displayed to the bidder. The Notice of Sale is provided to the auctioneer in advance by the Issuer in machine-readable form, is converted to HTML and stored on the auctioneer's web server for access by interested prospective bidders.

The "View POS" link (Exh. 6) causes the complete text of the Preliminary Official Statement for the issue selected to be displayed to the bidder. It is supplied to the auctioneer in machine-readable form by the Issuer, converted to HTML text and then stored on the auctioneer's web server for access by interested prospective bidders. Because the POS is a multi-page document, the auctioneer creates hypertext links to various parts of the POS from the items listed in the related table of contents to facilitate quick access by the bidder to selected portions of the document or rapid review and retrieval of information.

The "View Rules of Auction" link causes a text document stipulating the rules and conventions

that all bidders and Issuers must acknowledge or agree to abide by when participating in the auction. It also explains how disputes, if any, will be resolved, how bids are sequenced (first-in, first-out) and processed by the source code, what mathematical formulas and conventions are used to calculate prices and yields, and how purchase amounts may be altered after the auction to accommodate resizing.

5 The "Enter Auction" link leads to the
10 Registration Page, a description of which follows.
This link is selected when the bidder actually desires
to make a bid.

15 The Registration Page (Exh. 8) is used to
ensure that the user is identified and is verified to
be legitimate. It requires the user, as a condition
to entering the specific auction chosen on the
Selections Page, to enter its company identification
number (ID) assigned by the auctioneer and their
password, which is predetermined by the user.

20 If an incorrect ID number or password is
entered on the Registration Page (Exh. 8), the user
will link automatically to an Error message page (Exh.
9) explaining that one (or both) is incorrect; and
that they should click the BACK button to return to
25 the Registration Page (Exh. 8).

 After entering the correct ID and Password,
the user clicks the "Enter Auction" button and
proceeds to the Verification Page (Exh. 10), which
follows.

30 The Verification Page (Exh. 10) is used as
a double check on the identity of the user and to
verify that the user commits to abide by the rules of
the auction. It contains a list of questions that must

affirmatively be answered "yes" by clicking the "yes" response option after each one before the bidder can proceed to the Auction Page (Exh. 12). If any of the questions are not answered or are answered "no", the
5 user will be linked to an error message page (Exh. 11) identifying the question (or questions) which has not been answered properly and directing the bidder to either contact the Administrator (by link) for assistance or click the BACK button to return to the
10 Verification Page (Exh. 10).

Three of the questions contain direct links to the POS, Notice of Sale and Rules of MuniAuction, respectively, which the bidder can view while answering the questions on the Verification Page (Exh. 15) and before proceeding to the Auction Page (Exh. 12).

The Verification Page (Exh. 10) also allows bidders to select the bid format they would like to use on the Auction Page (Exh. 12) which follows, choosing either to enter the price and coupon combination or coupon and yield combination.
20

After answering "yes" to all the questions on the Verification Page (Exh. 10) and selecting a bid format the user clicks on the "Enter Auction" button
25 and proceeds to the Auction Page (Exh. 12).

The Auction Page (Exh. 12) displays a schedule of the principal maturity amounts and due dates for each maturity to be auctioned as well as the yield associated with the best bid, if any, which has
30 been received for each maturity. The bidder enters a price and coupon, or coupon and yield, depending upon the option selected on the Verification Page (Exh. 10), for each principal maturity it wants to purchase.

To determine the yield associated with the price and coupon combination (or the price associated with the coupon and yield combination) without actually submitting a bid, the bidder can click the
5 "Calculate/Refresh" button, which calculates the yield (or price) without actually submitting it. If the result is a yield lower than the "best yield" shown for that maturity, the user may choose to click the "Submit Bids" button and become the new "Leader" with
10 the "best yield" for that maturity (provided time remains before the auction ends). If no other bidder submits a better bid before the auction ends, then the Leader becomes the successful bidder, or "Winner" of the auction for the relevant maturity or maturities.

15 The Calculate/Refresh function is of great convenience. It can be implemented either in spreadsheet mode (in which a calculate/refresh operation is performed each time any entry is changed), or in delayed mode (in which calculate/refresh is performed only on demand by the user).

20 In another embodiment, the Auction page (Exh. 12) may optionally assist the bidder in optimizing his bid. That is, given yields and sales
25 commissions for each maturity in an issue, a calculation is performed to give the lowest TIC for the entire issue.

25 If the user attempts to submit a bid which results in a higher yield than a bid it has already submitted which became the current leading bid, it is linked to an Error message page (Exh. 13) that it is attempting to submit a bid which is worse than one they have already submitted and that the user should

click the BACK button to return to the Auction Page (Exh. 12).

Bidders may submit bids for one or more of the maturities listed or none at all. If a bidder 5 submits a bid which does not conform to the specifications in the Notice of Sale (e.g., minimum/maximum price per maturity or coupon multiple parameters), it is linked to an error message page (Exh. 14) describing which parameter is improper and 10 instructing the user to click the BACK button to return to the Auction Page (Exh. 12).

All bids must be submitted before the auction ends. The "Start" time, "End" time and current time or "Time Now" are shown at the top of the 15 Auction page (Exh. 12). Whenever bidders click the "Calculate/Refresh" button or "Submit Bids" button, "Time Now" is updated to the current time so that the bidder can keep track of how much time remains before the auction ends. In an alternative embodiment, "Time 20 Now" is updated automatically at brief intervals, for example, at one-second intervals.

The Observation Page (Exh. 15) is a special 25 page for the Issuer and Issuer's financial advisor to view the auction in progress. It shows the bids submitted and the company name of the bidder who is the Winner or current leader. The Observation Page (Exh. 15) is updated throughout the auction by clicking the "Refresh" button. In an alternative embodiment, the Observation Page (Exh. 15) is 30 continuously updated. The Observation Page (Exh. 15) is automatically accessed by the Issuer and Issuer's financial advisor when "Enter Auction" is clicked

after these users enter a special (issue-specific) ID number and Password on the Verification Page.

The Observation Page (Exh. 15) shows the true interest cost of the winning bids when there are bids for every maturity in the issue. It also shows the "resized" principal maturity amounts that coincide with the Notice of Sale parameters and the issuer's objectives (e.g., level annual debt service).

The Administrators Page (Exh. 16) is for use by the technical staff of the auctioneer to create, modify or terminate auctions, add or remove bidders, and view auctions in progress. It also shows the true interest cost of the winning bids and the resized principal amounts as described above.

A Bidders Log is provided containing a record of every bid submitted by every bidder during an auction. It identifies the bidder, the ID number and password entered by the bidder, the responses by that bidder to the questions on the Verification Page and the entries made by the bidder which were submitted as bids, whether winning bids or not.

Electronic mail (e-mail) confirmation is automatically generated to users on the occurrence of selected events. When a registered bidder enters its ID number and password, an e-mail confirmation is immediately sent to confirm the fact that they have entered an auction. If, for example, an impostor somehow succeeds in impersonating a bidder, the bidder will receive e-mail showing that the auctioneer believes the bidder has entered the auction. This serves as a cross-check for security purposes.

At the end of an auction, all winning bidders will automatically receive preliminary e-mail

confirmations of their winning bids and purchase amounts (as resized), as well as a reminder that when the issuer has made the formal award of bonds, they will receive another, final, e-mail confirmation.

5 Features of a preferred embodiment are described in Exh. 17.

It will be appreciated that although the embodiments described herein relate to municipal bond auctions, the disclosed process is applicable to any 10 type of auction. It will be apparent to those skilled in the art how to adapt the present invention to variant types of auctions.

We claim:

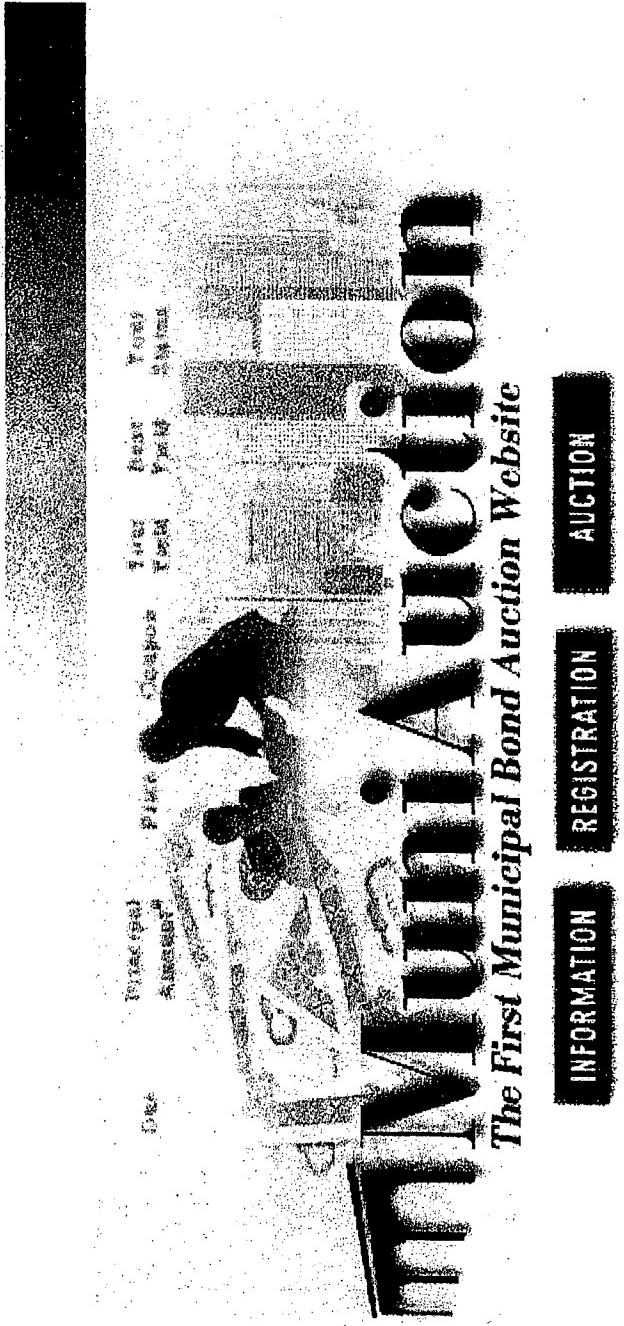
1. A process for conducting auctions allowing bidders to submit bids to an auctioneer over an electronic network, comprising the steps of:
 - 5 a) providing the auctioneer with an auctioneer computer having memory and connected to the network;
 - b) providing each bidder with a bidder computer having a display, said bidder computer being connected to the network;
 - 10 c) defining times certain for a start and a close of the auction;
 - d) allowing each of said bidders to submit one or more bids to the auctioneer via the network;
 - 15 e) maintaining in said memory of said auctioneer computer a highest bid so far received by the auctioneer;
 - f) displaying to each of said bidders via said displays of said bidder computers an amount corresponding to said highest bid, said highest bid being transmitted to said bidder computers by said auctioneer computer via the network; and
 - 20 g) determining within said auctioneer computer after said closing time which bidder submitted said highest bid.
 - 25

PROCESS FOR CONDUCTING AUCTIONS OVER ELECTRONIC
NETWORKS

ABSTRACT OF THE DISCLOSURE

A method of conducting auctions, specifically
5 municipal bond auctions, over electronic networks,
particularly the Internet. The auctioneer maintains
a web site from which information about bonds to be
auctioned can be obtained. A bidder participates in
the auction by accessing the web site via a
10 conventional Internet browser and is led through a
sequence of screens that perform the functions of
verifying the bidder's identity, assisting the bidder
in preparing a bid, verifying that the bid conforms to
the rules of the auction, displaying to the bidder the
15 current highest bid offered and informing the bidder
how much time remains in the auction. The web site
automatically confirms bidder's bid after it is
received over the network. The auctioneer is able to
review bidding history, determine the winner and
20 notify the winner over the network.

SEARCHED - SERIALIZED - INDEXED - FILED



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65431 U.S. PTO
60/067876

05/29/97



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MuniAuctionSM

Internet Website is where electronic auctions are conducted in real time. Both underwriters and institutional investors compete for the purchase of each and every maturity. *In short, MuniAuction means: more bids, more competition, lower rates, lower costs!*

With nearly 50% of all new municipal bond issues guaranteed by AAA-rated insurance policies, tax-free bonds have become "commodities" that can -- and should -- be sold via competitive bid.

Nevertheless, only 25% of new issues are competitively bid; partly because current competitive bidding procedures are administratively complicated, technologically inefficient and result in only marginally lower interest rates.

MuniAuction, The First Municipal Bond Auction Website, provides a solution to these problems -- including materially lower interest rates.

Problem:

Competitive Bid Process Today



What's wrong with this process?

- does not allow bidders to see other bids and improve their own -- only one bid allowed per bidder
- does not allow "maturity-by-maturity" bids -- only "all or none"
- does not allow institutional investors to submit bids -- only underwriters bid
- depends upon unreliable fax transmissions -- a problem for issuers and bidders alike

Savings

Eliminates Management Fees²
\$0.25 - \$1.50 per bond

Reduces or Eliminates Underwriter Sales Commission
\$2.50 - \$7.50 per bond

Lowers Interest Rates
5 - 10 Basis Points

Simplifies Bid Preparation and Administration
Issuer's & Bidder's Time

¹Estimated Savings are indicative of potential savings; however they are not guarantees of actual results.

²Compared to negotiated sales.

EXHIBIT

2

Solution:

The MuniAuction
Competitive Bid Process



[Next Page](#)

Go to: [MuniAuction Home Page](#)

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<font size=9><b>MuniAuction</b></font><font size=3><sup>SM</sup></font> Internet
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<h2>Savings</h2>
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<P>

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<P>

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</table>

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Solution:<dd>The MuniAuction
<dd>Competitive Bid Process<p>

What's the difference about MuniAuction?<p>

<dd>allows bidders to

<dd>see other bids and

<dd>improve bids

<dd>allows "maturity by

<dd>maturity" bids and

<dd>"all or none"

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<dd>as underwriters, to

<dd>submit bids.

<dd>eliminates the

```
<dd>problematic fax
<dd><li>works on any
<dd>computer without
<dd>special software--just
<dd>access the Internet
<br clear=all>
<td valign=top>

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<center>
<a href="brochure3.html"><b>Next Page</b></a>
</center>
<!--
Go to:<a href="http://storm.shodor.org/ma/index2.html">MuniAuction Home Page</a>
<!--
</body>
</html>
```

How does MuniAuction work?

Auction
Selections
Webpage

The screenshot shows a Netscape browser window titled "Netscape! MuniAuction". The URL is http://www.muni-auction.com. The page has a header with links for "What's New?", "What's Cool?", "Destinations", "NetSearch", "People", and "Software". Below the header, there is a large title "Selections" with the "MuniAuction" logo to its right. A sub-header says "Select auction and then choose from the options above". There is a table with columns: SELECT, Issuer, State, Description, Size*, Auction Date*, Start Time*. Two rows are listed:

SELECT	Issuer	State	Description	Size*	Auction Date*	Start Time*
<input type="radio"/>	City of Pittsburgh	PA	General Obligation Refunding Bonds, Series A of 1996	\$167,440,000	12/15/96	10:30 a.m. EST
<input type="radio"/>	Housing Finance Authority	TX	Mortgage Revenue Bonds, General 1996	\$78,500,000	12/15/96	11:00 a.m. CST

Bidders who are registered with MuniAuction can select from a variety of auctions, and review the Notice of Sale and Preliminary Official Statement (POS) on-line before entering the auction of choice.

The
Bidder's
Webpage

The screenshot shows a Netscape browser window titled "Netscape! MuniAuction". The URL is http://www.muni-auction.com. The page has a header with links for "What's New?", "What's Cool?", "Destinations", "NetSearch", "People", and "Software". Below the header, there is a large title "Auction" with the "MuniAuction" logo to its right. A sub-header says "Auction Date: Tue Dec 16, 1996 Start: 10:30 am End: 10:45 am Time Zone: 10:30:10 pm". Below this, it says "Name of firm submitting bid: Mutual Fund". There is a table with columns: Due, Principal Amount*, Price, Coupon, Your Yield, Best Yield, Your Status. Three rows are listed:

Due	Principal Amount*	Price	Coupon	Your Yield	Best Yield	Your Status
March 1, 1998	\$15,260,000	99.000	.00	16	No Bid	Not Leader
March 1, 1999	\$15,890,000	100.000	.00	4.400	4.400	Leader
March 1, 2000	\$15,225,000	99.041	.00	4.250	4.250	Not Leader

The issuer offers bond for sale on the MuniAuction website. Qualified institutional investors and underwriters visit the site at the scheduled auction time and submit bids to purchase one or more bond maturities. Throughout the 15 minute auction, they can see the best bid and repeatedly improve their own.

**The
Issuer's
Webpage**

The screenshot shows a Netscape browser window with the title "Netscape: MuniAuction". The URL in the address bar is "http://www.muni-auction.com". The main content area displays an "Observation" page for a municipal bond auction. The auction details are as follows:

- Auction Date: Tue Feb 21, 1995
- Starts: 10:30 am
- Ends: 10:45 am
- Time Now: 10:46:30 am
- Total Bid: \$167,400,000*
- City of Pittsburgh, Pennsylvania
- General Obligation Refunding Bonds, Series A of 1995

Below this, there is a table showing the results of the auction:

Due	Principal Amount ^a	Price	Coupon	Yield	Winner
March 8, 1998	\$15,285,000	101.610 98	4.150 98	4.002 98	Insurance Company
March 1, 1999	\$15,890,000	100.650 98	4.150 98	4.403 98	Mutual Fund
March 1, 2000	\$15,225,000	99.177 98	4.250 98	4.559 98	Underwriter

*For illustrative purposes only

The issuer can watch the auction in progress from their own MuniAuction Webpage. They will see winning bids as they are submitted and winning bidders. MuniAuction even computes the True Interest Cost (TIC) of the winning bids.

[Previous Page](#) [Next Page](#)

Go to: [MuniAuction Home Page](#)

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<h1><font size=+9><b>How does MuniAuction work?</b></font></h1>

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<tr><td valign=top><h2>Auction<br>Selections<br>Webpage</h2>
<td><td valign=top>
Bidders who are registered with
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<tr><td valign=top><h2>The<br>Bidder's<br>Webpage</h2>
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<td><a href="brochure4.html"><b>Next Page</b></a>
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Go to:
<a href="http://storm.shodor.org/ma/index2.html">MuniAuction Home Page</a>
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```

Issuer Options

MuniAuction can be used in a variety of ways by issuers and bidders. Choose from the options...

Replace the Fax



MuniAuction can serve simply as a fax replacement -- without changing any other aspect of the traditional competitive sale process. It is also a tool to simplify tasks performed by the issuer.

- Forces bids to conform to issuer's specs
- Calculates TIC
- Summarizes auction results
- E-mails "confirmations" to winning bidders

Allow Multiple Bids



If issuers want to retain the "underwriters only" and "all-or-none" features of traditional competitive sales, they can improve competition with MuniAuction by simply allowing underwriters to see the best bid and raise their own throughout the 15 minute duration of the auction.

- Increases number of bids
- Enhances competition among underwriters

Introduce New Kinds of Bidders



MuniAuction's "maturity-by-maturity" bidding option enables smaller, regional underwriters and institutional investors -- previously excluded from traditional competitive sales -- to bid aggressively for selected maturities.

- Introduces entirely new types of bidders
- Minimizes yield for *every* maturity
- Reduces gross spread

Remember

The issuer decides which options to use: Replace the Fax, Allow Multiple Bids, Introduce New Kinds of Bidders.

Contact Information



Call Myles Harrington or Dan Veres at 412-391-7686 for an on-line demonstration.

MuniAuction Phone: (412) 391-7686
Allegheny Building, Suite 1212 Fax: (412) 391-7608
429 Forbes Avenue Website: MuniAuction.com
Pittsburgh, PA 15219

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[Previous Page](#)

Go to: [MuniAuction Home Page](#)

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<h1><font size=+9><b>Issuer Options</b></font></h1>

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<td><center><h2>Replace<br>the Fax<br>
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<td><h2>Allow<br>Multiple<br>Bids<br></h2>
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```

```
<tr>
<td><h2>Remember</h2><td valign=top>
The issuer decides which options to use: Replace the Fax, Allow
Multiple Bids, Introduce New Kinds of Bidders.
<tr>
<td valign=bottom><h2>Contact<br>Information</h2>
<td>
<p>
Call <b>Myles Harrington</b> or <b>Dan Veres</b> at
412-391-7686 for an on-line demonstration.
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<ul><ul>
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<tr><td valign=top>
MuniAuction<br>
Allegheny Building, Suite 1212<br>
429 Forbes Avenue<br>
Pittsburgh, PA 15219
<td valign=top>
<em>Phone:</em> &ampnbsp&ampnbsp(412) 391-7686<br>
<em>Fax:</em> &ampnbsp&ampnbsp&ampnbsp&ampnbsp&ampnbsp&ampnbsp&ampnbsp&ampnbsp(412) 391-7608<br>
<em>Website:</em> MuniAuction.com
</table>
<hr noshade size=5>
<font size=1>Copyright &copy 1997, MuniAuction, Inc. All Rights Reserved.
Patent Pending. Copyright &copy 1997 Netscape Communications Corp.
All Rights Reserved. This page may not be reprinted or copied without the
express written permission of Netscape. Netscape is a trademark of Netscape
Communications Corporation, which is registered in the United States
and other countries.
</font>
</ul></ul>
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<center>
<a href="brochure3.html"><b>Previous Page</b></a>
</center>
<p>
Go to:
<a href="http://storm.shodor.org/ma/index2.html">MuniAuction Home Page</a>
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◊
</body>
</html>

m Selections

MuniAuction

[Enter Auction](#)[View Notice of Sale](#)[View POS](#)[View Rules of MuniAuction](#)

Select auction and then choose from the options above

SELECT	Issuer	State	Description	Size*	Auction Date*	Start Time*
<input type="radio"/>	City of Pittsburgh	PA	General Obligation Refunding Bonds, Series A of 1996	\$167,440,000	12/3/96	10:30 a.m. EST
<input type="radio"/>	Housing Finance Authority	TX	Mortgage Revenue Bonds, Series of 1996	\$78,500,000	12/5/96	11:00 a.m. CST
<input type="radio"/>	State Public Facilities Authority	CO	Higher Education Capital Facilities Bonds, Series I-1996B	\$150,000,000	12/11/96	11:00 a.m. MST
<input type="radio"/>	State of Atlantis	AT	General Obligation Bonds, 1996 Series C	\$115,230,000	12/12/96	10:00 a.m. PST

*Preliminary, subject to change
Auctions shown above are for illustrative purposes only.

[Exit to: MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com

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EXHIBIT

4

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<input type=submit name=documents value="View POS">
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<strong>Select auction and then choose from the options above</strong>
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<th>SELECT<th>Issuer<th>State<th>Description<th>Size<sup>*</sup><th>Auction<br>Da
te<sup>*</sup><th align=center>Start <br> Time<sup>*</sup>
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<tr>
<td align=center><input type=radio name=auction_name value="pitts-1996-a">
<td align=center>City of Pittsburgh
<td align=center>PA
<td align=center>General Obligation Refunding Bonds, Series A of 1996
<td align=center>$167,440,000
<td align=center>12/3/96
<td align=center>10:30 a.m.<br>EST
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<td align=center><input type=radio name=auction_name value="genius">
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<td align=center>TX
<td align=center>Mortgage Revenue Bonds, Series of 1996
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<td align=center>11:00 a.m.<br>CST
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<td align=center><input type=radio name=auction_name value="bob-3">
<td align=center>State Public Facilities Authority
<td align=center>CO
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<td align=center>Higher Education Capital Facilities Bonds, Series I-1996B
<td align=center>$150,000,000
<td align=center>12/11/96
<td align=center>11:00 a.m.<br>MST
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<td align=center>AT
<td align=center>General Obligation Bonds, 1996 Series C
<td align=center>$115,230,000
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<address>Please direct questions and comments to <a
href="mailto:Administrator@MuniAuction.com">Administrator@MuniAuction.com</a><b
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</address>
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NOTICE OF SALE

\$167,440,000*

City of Pittsburgh, Pennsylvania General Obligation Refunding Bonds, Series A of 1996

Sealed proposals to purchase ("Proposals") in the form accompanying this Notice of Sale will be received by the City of Pittsburgh, Pennsylvania (the "City"), at the Office of the City Controller, Pittsburgh, Pennsylvania, up to but not later than 10:30 a.m. on Tuesday, December 3, 1996 for the purchase of all, but not less than all, of \$167,440,000* aggregate principal amount, of the City of Pittsburgh, Pennsylvania, General Obligation Refunding Bonds, Series A of 1996 (the "Bonds"). The Proposals will be publicly opened and read immediately thereafter in the Office of the City Controller. The winning bidder will receive formal award of its Proposal no later than 3:30 p.m. on Wednesday, December 4, 1996. All Proposals must be delivered to the Honorable Tom Flaherty, City Controller, or his duly authorized representative, in the Office of the City Controller, City-County Building -- First Floor, Grant Street, Pittsburgh, Pennsylvania, 15219 and should be enclosed in a sealed envelope, marked on the outside substantially as follows: "Proposal for Purchase of City of Pittsburgh Bonds", or transmitted via telecopier to (412) 255-8990, Attention: Honorable Tom Flaherty, City Controller; Phone No. (412) 255-2055. All times indicated are Prevailing Eastern Time.

Security. The Bonds will be direct and general obligations of the City, issued pursuant to and within the debt limits prescribed by the Local Government Unit Debt Act of the Commonwealth of Pennsylvania. The full faith, credit and taxing power of the City (including the power to levy ad valorem taxes on all taxable real estate within its boundaries) will be pledged for the payment of the principal of and interest on the Bonds. In addition, the City requires that bond insurance be obtained as described below.

Bond Details. The Bonds will be sold in book-entry-only form in denominations of \$5,000 and integral multiples thereof and will be registered in the name of Cede & Co., as nominee of The Depository Trust Company, New York, New York ("DTC"), serving as securities depository for the Bonds. Beneficial ownership of the Bonds may be acquired in denominations of \$5,000 and any whole multiple thereof only under the book-entry system maintained by DTC through its brokers and dealers who are, or act through, DTC Participants. The Bonds will be initially dated December 15, 1996, and will bear such rate or rates of interest, payable semi-annually on March 1 and September 1 in each year, commencing March 1, 1997, as shall be fixed by the successful bidder in its Proposal. The Bonds shall mature serially, or shall be term Bonds subject to mandatory redemption (or may be any combination thereof) on March 1 in each of the following years and amounts respectively (subject to adjustment as explained below):

Maturity (March 1)	Principal Amount*	Maturity (March 1)	Principal Amount*
1998	15,285,000	2003	17,255,000
1999	15,890,000	2004	18,025,000
2000	15,225,000	2005	18,850,000
2001	15,860,000	2006	19,720,000
2002	16,540,000	2007	14,790,000

The Bonds will be delivered in New York, New York on or about Tuesday, December 31, 1996.

Adjustment of Principal Payment. The principal amounts set forth in this Notice of Sale reflect certain estimates of the City's financial advisor, Grant Street Advisors (the "Financial Advisor") with respect to the likely interest rates of the winning Proposal and the premium or discount contained in the winning Proposal. The City reserves the right to increase or decrease the aggregate principal amount of the Bonds by no more than \$2,500,000. Each principal payment on the Bonds is subject to increase or decrease in \$5,000 increments, and no single principal payment will be increased or decreased by more than \$2,500,000. In any event, the successful bidder's bid price for each maturity and the underwriter's discount per Bond will remain unchanged and the overall purchase price will be adjusted for any increase and/or decrease in principal maturity amounts.

Bond Insurance. The following insurers have qualified the Bonds for municipal bond insurance:

AMBAC Indemnity Corporation ("AMBAC");
Financial Guaranty Insurance Company ("FGIC");
Financial Security Assurance ("FSA"); and
MBIA Insurance Corporation ("MBIA")

Interested bidders should contact the Financial Advisor at (412) 391-5555 or the insurers directly, on or after 4:00 p.m. on Monday, December 2, 1996 regarding the cost and conditions of such insurance. The City will pay the insurance premium of the insurer selected by the winning bidder at closing. The insurance premium should be included in the calculation of the true interest cost.

EXHIBIT

5

Offering Price Certificate. At the closing for the issuance of the Bonds, the successful bidder will be required to furnish to the City a certificate, in form and substance satisfactory to Co-Bond Counsel, containing information required to enable the City to compute the yield on the Bonds for federal arbitrage purposes, including, but not limited to, the price at which a substantial portion (10% of each maturity) of the Bonds were first offered to the general public and the actual price at which such portions were sold.

Optional Redemption. The Bonds are not subject to optional redemption.

Interest Rates and Bidding Details. Each bidder shall designate a rate of interest per annum to be paid on the Bonds of each maturity subject to the following limitations:

- (i) all Bonds of the same series and maturity year must bear the same rate of interest and no one Bond shall bear more than one rate of interest; and
- (ii) no interest rate shall be other than a whole multiple of 1/20th or 1/8th of 1% and a zero rate of interest may not be named; and
- (iii) each interest rate specified for Bonds of any maturity shall not be less than the rate of interest specified for any earlier maturity.

Term Bonds may be specified. No bid for the Bonds shall be accepted at a purchase price of less than 97.50000% exclusive of accrued interest. For any maturity, the reoffering price cannot be less than 98.0%. Proposals may specify any number of interest rates subject to (i) through (iii) above. The purchaser of the Bonds must pay accrued interest from the date of the Bonds to their date of delivery. No Proposal will be considered which does not offer to purchase all of the Bonds.

Basis of Award. The Bonds will be awarded to the bidder offering to buy all the Bonds at the lowest true interest cost to the City. The lowest true interest cost will be determined by doubling the semi-annual interest rate, compounded semi-annually, necessary to discount the semi-annual debt service payments from the payment dates to the dated date of the Bonds and to the purchase price, excluding the bond insurance premium and interest accrued to the date of delivery. Each bidder is requested to supply an estimate of the true interest cost associated with their Proposal, which shall be informative only and not binding on either the bidder or the City. The Bonds will be sold subject to the receipt of the approving legal opinion of Kutak Rock, Pittsburgh, Pennsylvania, and Meyer, Darragh, Buckler, Bebenek & Eck, Pittsburgh, Pennsylvania, Co-Bond Counsel, whose opinion, in the form included as Appendix D to the Preliminary Official Statement, will be delivered to the successful bidder. The City reserves the right (i) to amend this Notice of Sale one or more times prior to 10:30 a.m. on Tuesday, December 3, 1996 by publishing such amendments via Munifacts wire service, (ii) to reject any or all Proposals for the Bonds, (iii) to postpone the sale of the Bonds, and (iv) to waive any irregularity or informality in any Proposal. Each Proposal must be submitted on a Proposal to Purchase form accompanying this Notice of Sale.

Disclosure Counsel. Peck, Shaffer & Williams, L.L.P., Pittsburgh, Pennsylvania, as Disclosure Counsel, will provide the following documents to the winning bidder in connection with the initial sale of Bonds: (1) SEC Rule 10(b)-5 Opinion and (2) SEC Rule 15c2-12(b)(1) Certificate, signed by the City, as to the Preliminary Official Statement, Official Statement and compliance with 15c2-12(b)(5). If the winning bidder requests that Disclosure Counsel perform additional services, the winning bidder must pay the costs of such additional services.

Local, Minority Business Enterprise (MBE) and Women Business Enterprise (WBE) Participation. Not less than 50% of the Bonds must be allotted to underwriting firms which are local (i.e., headquartered in Pittsburgh), MBE and WBE, to the extent such firms place orders for the Bonds at rates and prices consistent with the winning bid. Furthermore, qualified orders from MBE firms must be filled up to 25% of the face amount of the Bonds and qualified orders from WBE firms must be filled up to 10% of the face amount of the Bonds. In any event, the winning bidder must accept, to the extent required above, any order at the reoffering price placed by an MBE or WBE firm which is not a member of the bidding group. The Financial Advisor, acting on behalf of the City, must receive a written report from the winning bidder within 48 hours of the award showing the orders received and the allotments made to each firm. Failure to comply with the City's local, MBE and WBE requirements could result in forfeiture of the Good Faith Deposit.

Good Faith Deposit. For each Proposal to be considered, a Good Faith Deposit ("Deposit") is required in the amount of \$3,350,000 for the Bonds. The Deposit must be in the form of (1) a certified or cashier's check or (2) a financial surety bond ("Surety Bond") payable to the order of the City. If a check is used, it must be included with the Proposal. If a Surety Bond is used, it must be from an insurance company licensed to issue such a bond in Pennsylvania, and such bond must be submitted to the City prior to the opening of the Proposals. If you intend to use a Surety Bond and are not pre-approved by an insurance company, you may contact Sure-Bid at (415) 995-8066. The Surety Bond must identify each bidder whose Deposit is guaranteed by such Surety Bond. If the Bonds are awarded to a bidder utilizing a Surety Bond, then that purchaser is required to submit its Deposit to the City in the form of a cashier's check (or wire transfer such amount as instructed by the City) not later than 3:30 p.m. on Thursday, December 5, 1996. If such Deposit is not received by that time, the Surety Bond may be drawn by the City to satisfy the Deposit requirement. No interest on the Deposit will accrue to the successful bidder. The Deposit will be applied to the purchase price of the Bonds. In the event the successful bidder fails to honor its accepted Proposal, the Deposit may be retained by the City.

Disclosure. The City will certify its intent to provide ongoing disclosure about the City, for the benefit of the Bondholders, on or before the date of delivery of the Bonds as required by Section(b)(5)(i) of the Securities and Exchange Commission Rule 15c2-12 (the "Rule"), which undertaking is summarized in the POS, with such changes as may be agreed to in writing by the Underwriter.

Official Statement. Limited copies of the Preliminary Official Statement ("POS") dated November 22, 1996 may be obtained by

calling the Financial Advisor. The POS is in a form "deemed final" by the City for the purpose of Rule 15c2-12(b)(1) of the Securities and Exchange Commission but is subject to revision, amendment and completion in the Official Statement. The City will provide to the successful bidder, without cost, up to 500 copies of the Official Statement. Upon request, the City will provide additional copies of the Official Statement at the expense of the successful bidder.

The Senior Manager of each syndicate is required to notify the Financial Advisor by 5:00 p.m. on Monday, December 2, 1996 of their intent to bid. Any questions concerning the sale of the Bonds should be directed to the Financial Adviser at (412) 391-5555.

November 22, 1996

Paul Hennigan
Director of Finance
City of Pittsburgh

*Preliminary, subject to change

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<center>
<h3>
NOTICE OF SALE<br><br>
$167,440,000*<br>
City of Pittsburgh, Pennsylvania<br>
General Obligation Refunding Bonds, Series A of 1996<br>
</h3>
</center>
```

Sealed proposals to purchase ("Proposals") in the form accompanying this Notice of Sale will be received by the City of Pittsburgh, Pennsylvania (the "City"), at the Office of the City Controller, Pittsburgh, Pennsylvania, up to but not later than **10:30 a.m.** on **Tuesday, December 3, 1996** for the purchase of all, but not less than all, of \$167,440,000* aggregate principal amount, of the City of Pittsburgh, Pennsylvania, General Obligation Refunding Bonds, Series A of 1996 (the "Bonds"). The Proposals will be publicly opened and read immediately thereafter in the Office of the City Controller. The winning bidder will receive formal award of its Proposal no later than **3:30 p.m.** on **Wednesday, December 4, 1996**. All Proposals must be delivered to the Honorable Tom Flaherty, City Controller, or his duly authorized representative, in the Office of the City Controller, City-County Building -- First Floor, Grant Street, Pittsburgh, Pennsylvania, 15219 and should be enclosed in a sealed envelope, marked on the outside substantially as follows: "Proposal for Purchase of City of Pittsburgh Bonds", or transmitted via telecopier to (412) 255-8990, Attention: Honorable Tom Flaherty, City Controller; Phone No. (412) 255-2055. All times indicated are Prevailing Eastern Time.

♦

Security. The Bonds will be direct and general obligations of the City, issued pursuant to and within the debt limits prescribed by the Local Government Unit Debt Act of the Commonwealth of Pennsylvania. The full faith, credit and taxing power of the City (including the power to levy ad valorem taxes on all taxable real estate within its boundaries) will be pledged for the payment of the principal of and interest on the Bonds. In addition, the City requires that bond insurance be obtained as described below.

♦

Bond Details. The Bonds will be sold in book-entry-only form in denominations of \$5,000 and integral multiples thereof and will be registered

in the name of Cede & Co., as nominee of The Depository Trust Company, New York, New York ("DTC"), serving as securities depositary for the Bonds. Beneficial ownership of the Bonds may be acquired in denominations of \$5,000 and any whole multiple thereof only under the book-entry system maintained by DTC through its brokers and dealers who are, or act through, DTC Participants. The Bonds will be initially dated December 15, 1996, and will bear such rate or rates of interest, payable semi-annually on March 1 and September 1 in each year, commencing March 1, 1997, as shall be fixed by the successful bidder in its Proposal. The Bonds shall mature serially, or shall be term Bonds subject to mandatory redemption (or may be any combination thereof) on March 1 in each of the following years and amounts respectively (subject to adjustment as explained below):

<P>

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Maturity (March 1)	Principal	Maturity (March 1)	Principal	Amount	*
1998	15,285,000	2003	17,255,000	15,890,000	18,025,000
1999	15,225,000	2004	18,850,000	15,860,000	19,720,000
2000	15,225,000	2005	18,850,000	16,540,000	19,720,000
2001	15,225,000	2006	18,850,000	16,540,000	19,720,000
2002	15,225,000	2007	18,850,000	16,540,000	19,720,000

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The Bonds will be delivered in New York, New York on or about Tuesday, December 31, 1996.

<P>

Adjustment of Principal Payment. The principal amounts set forth in this Notice of Sale reflect certain estimates of the City's financial advisor, Grant Street Advisors (the "Financial Advisor") with respect to the likely interest rates of the winning Proposal and the premium or discount contained in the winning Proposal. The

City reserves the right to increase or decrease the aggregate principal amount of the Bonds by no more than \$2,500,000. Each principal payment on the Bonds is subject to increase or decrease in \$5,000 increments, and no single principal payment will be increased or decreased by more than \$2,500,000. In any event, the successful bidder's bid price for each maturity and the underwriter's discount per Bond will remain unchanged and the overall purchase price will be adjusted for any increase and/or decrease in principal maturity amounts.

◊

Bond Insurance. The following insurers have qualified the Bonds for municipal bond insurance:

<dd>AMBAC Indemnity Corporation ("AMBAC");
<dd>Financial Guaranty Insurance Company ("FGIC");
<dd>Financial Security Assurance ("FSA"); and
<dd>MBIA Insurance Corporation ("MBIA")

◊

Interested bidders should contact the Financial Advisor at (412) 391-5555 or the insurers directly on or after 4:00 p.m. on Monday, December 2, 1996 regarding the cost and conditions of such insurance. The City will pay the insurance premium of the insurer selected by the winning bidder at closing. The insurance premium should be included in the calculation of the true interest cost.

◊

Offering Price Certificate. At the closing for the issuance of the Bonds, the successful bidder will be required to furnish to the City a certificate, in form and substance satisfactory to Co-Bond Counsel, containing information required to enable the City to compute the yield on the Bonds for federal arbitrage purposes, including, but not limited to, the price at which a substantial portion (10% of each maturity) of the Bonds were first offered to the general public and the actual price at which such portions were sold.

◊

Optional Redemption. The Bonds are not subject to optional redemption.

◊

Interest Rates and Bidding Details. Each bidder shall designate a rate of interest per annum to be paid on the Bonds of each maturity subject to the following limitations:

<pre>

- (i) all Bonds of the same series and maturity year must bear the same rate of interest
 - and no one Bond shall bear more than one rate of interest; and
- (ii) no interest rate shall be other than a whole multiple of 1/20th or 1/8th of 1% and a zero rate of interest may not be named; and

(iii) each interest rate specified for Bonds of any maturity shall not be less than the

rate of interest specified for any earlier maturity.

</pre>

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Term Bonds may be specified. No bid for the Bonds shall be accepted at a purchase price of less than 97.50000% exclusive of accrued interest. For any maturity, the reoffering price cannot be less than 98.0%. Proposals may specify any number of interest rates subject to (i) through (iii) above. The purchaser of the Bonds must pay accrued interest from the date of the Bonds to their date of delivery. No Proposal will be considered which does not offer to purchase all of the Bonds.

<p> Basis of Award. The Bonds will be awarded to the bidder offering to buy all the Bonds at the lowest true interest cost to the City. The lowest true interest cost will be determined by doubling the semi-annual interest rate, compounded semi-annually, necessary to discount the semi-annual debt service payments from the payment dates to the dated date of the Bonds and to the purchase price, excluding the bond insurance premium and interest accrued to the date of delivery. Each bidder is requested to supply an estimate of the true interest cost associated with their Proposal, which shall be informative only and not binding on either the bidder or the City. The Bonds will be sold subject to the receipt of the approving legal opinion of Kutak Rock, Pittsburgh, Pennsylvania, and Meyer, Darragh, Buckler, Bebenek & Eck, Pittsburgh, Pennsylvania, Co-Bond Counsel, whose opinion, in the form included as Appendix D to the Preliminary Official Statement, will be delivered to the successful bidder. The City reserves the right (i) to amend this Notice of Sale one or more times prior to 10:30 a.m. on Tuesday, December 3, 1996 by publishing such amendments via MuniFacts wire service, (ii) to reject any or all Proposals for the Bonds, (iii) to postpone the sale of the Bonds, and (iv) to waive any irregularity or informality in any Proposal. Each Proposal must be submitted on a Proposal to Purchase form accompanying this Notice of Sale.

<p>

Disclosure Counsel. Peck, Shaffer & Williams, L.L.P., Pittsburgh, Pennsylvania, as Disclosure Counsel, will provide the following documents to the winning bidder in connection with the initial sale of Bonds: (1) SEC Rule 10(b)-5 Opinion and (2) SEC Rule 15c2-12(b)(1) Certificate, signed by the City, as to the Preliminary Official Statement, Official Statement and compliance with 15c2-12(b)(5). If the winning bidder requests that Disclosure Counsel perform additional services, the winning bidder must pay the costs of such additional services.

<P>

Local, Minority Business Enterprise (MBE) and Women Business Enterprise (WBE) Participation. Not less than 50% of the Bonds must be allotted to underwriting

firms which are local (i.e.; headquartered in Pittsburgh), MBE and WBE, to the extent such firms place orders for the Bonds at rates and prices consistent with the winning bid. Furthermore, qualified orders from MBE firms must be filled up to 25% of the face amount of the Bonds and qualified orders from WBE firms must be filled up to 10% of the face amount of the Bonds. In any event, the winning bidder must accept, to the extent required above, any order at the reoffering price placed by an MBE or WBE firm which is not a member of the bidding group. The Financial Advisor, acting on behalf of the City, must receive a written report from the winning bidder within 48 hours of the award showing the orders received and the allotments made to each firm. Failure to comply with the City's local, MBE and WBE requirements could result in forfeiture of the Good Faith Deposit.

<P>

Good Faith Deposit. For each Proposal to be considered, a Good Faith Deposit ("Deposit") is required in the amount of \$3,350,000 for the Bonds. The Deposit must be in the form of (1) a certified or cashier's check or (2) a financial surety bond ("Surety Bond") payable to the order of the City. If a check is used, it must be included with the Proposal. If a Surety Bond is used, it must be from an insurance company licensed to issue such a bond in Pennsylvania, and such bond must be submitted to the City prior to the opening of the Proposals. If you intend to use a Surety Bond and are not pre-approved by an insurance company, you may contact Sure-Bid at (415) 995-8066. The Surety Bond must identify each bidder whose Deposit is guaranteed by such Surety Bond. If the Bonds are awarded to a bidder utilizing a Surety Bond, then that purchaser is required to submit its Deposit to the City in the form of a cashier's check (or wire transfer suchamount as instructed by the City) not later than 3:30 p.m. on Thursday, December 5, 1996. If such Deposit is not received by that time, the Surety Bond may be drawn by the City to satisfy the Deposit requirement. No interest on the Deposit will accrue to the successful bidder. The Deposit will be applied to the purchase price of the Bonds. In the event the successful bidder fails to honor its accepted Proposal, the Deposit may be retained by the City.

<P>

Disclosure. The City will certify its intent to provide ongoing disclosure about the City, for the benefit of the Bondholders, on or before the date of delivery of the Bonds as required by Section(b)(5)(i) of the Securities and Exchange Commission Rule 15c2-12 (the "Rule"), which undertaking is summarized in the POS, with such changes as may be agreed to in writing by the Underwriter.

<P>

Official Statement. Limited copies of the Preliminary Official Statement ("POS") dated November 22, 1996 may be obtained by calling the Financial Advisor. The POS is in a form "deemed final" by the City for the purpose of Rule 15c2-12(b)(1)

of the Securities and Exchange Commission but is subject to revision, amendment and completion in the Official Statement. The City will provide to the successful bidder, without cost, up to 500 copies of the Official Statement. Upon request, the City will provide additional copies of the Official Statement at the expense of the successful bidder.

<u>

<u>The Senior Manager of each syndicate is required to notify the Financial Advisor by 5:00 p.m. on Monday, December 2, 1996 of their intent to bid.</u> Any questions concerning the sale of the Bonds should be directed to the Financial Adviser at (412) 391-5555.

<u>

<pre>

November 22, 1996

Paul Hennigan
Director of Finance
City of Pittsburgh

</pre>

*Preliminary, subject to change

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This Preliminary Official Statement and the information contained herein are subject to completion, amendment or other change without notice. The Bonds may not be sold nor may offers to buy be accepted prior to the time the Official Statement is delivered in final form. Under no circumstances shall this Preliminary Official Statement constitute an offer to sell or the solicitation of an offer to buy, nor shall there be any sale of the Bonds in any jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the applicable securities laws of any such jurisdiction. The City has deemed this Preliminary Official Statement to be final for purposes of SEC Rule 15c2-12(b)(1) of the Securities and Exchange Commission, except for certain information which has been omitted in accordance with such Rule and which will be provided in the final Official Statement. **PRELIMINARY OFFICIAL STATEMENT DATED NOVEMBER 22, 1996**

Competitive Bid New Issue Book-Entry-Only **Ratings:** Moody's: "—" Standard & Poor's: "—" (— Insured)
(See "Bond Ratings" herein)

In the opinion of Co-Bond Counsel, assuming continued compliance with certain covenants described herein, under existing laws, regulations, rulings and judicial decisions, interest on the Bonds (including any original issue discount properly attributable to a holder thereof) is excludable from the gross income of the recipients thereof for federal income tax purposes under the Internal Revenue Code of 1986, as amended (the "Code"), and such interest will not be treated as a preference item in calculating the alternative minimum tax that may be imposed on individuals and corporations. Under the Code, interest on the Bonds is to be taken into account in the computation of certain taxes that may be imposed with respect to corporations, including, without limitation, the alternative minimum tax, the environmental tax and the foreign branch profits tax. Under the laws of the Commonwealth of Pennsylvania as presently enacted and construed, the Bonds are exempt from personal property taxes in Pennsylvania and interest on the Bonds is exempt from Pennsylvania personal income tax and from Pennsylvania corporate net income tax. See the information contained herein under the caption "TAX EXEMPTION AND OTHER TAX MATTERS" herein.

\$167,440,000*
CITY OF PITTSBURGH
(Commonwealth of Pennsylvania)
General Obligation Refunding Bonds
Series A of 1996

Dated: December 15, 1996
Due: March 1, as shown on inside front cover
Denomination: Integral multiples of \$5,000

Interest Payable: March 1 and September 1
First Interest Payment Date: March 1, 1997
Form: Book-Entry Only

Payable: The General Obligation Refunding Bonds, Series A of 1996 (the "Bonds"), will be initially issued by the City of Pittsburgh, Pennsylvania (the "City") only in fully registered form, without coupons, and will be registered in the name of Cede & Co., as nominee of The Depository Trust Company, New York, New York ("DTC"), serving as securities depositary for the Bonds. Beneficial ownership of the Bonds may be acquired in denominations of \$5,000 and any whole multiple thereof only under the book-entry system maintained by DTC through its brokers and dealers who are, or act through, DTC Participants. The purchasers of the Bonds will not receive physical delivery of the Bonds. Principal of the Bonds will be payable at the principal corporate trust office of Mellon Bank, N.A., Paying Agent (the "Paying Agent"). Interest on the Bonds is payable semi-annually on March 1 and September 1, commencing on March 1, 1997. For so long as any purchaser is the beneficial owner of a Bond, that purchaser must maintain an account with a broker or dealer who is, or acts through, a DTC Participant to receive payment of principal and interest on such Bond. See "THE BONDS - Book-Entry-Only System." If, under the circumstances described herein, Bonds are ever issued in certificated form, the Bonds will be subject to registration of transfer, exchange and payment as described herein, including payment of interest by wire transfer upon the request of an owner of at least \$1,000,000 in aggregate principal amount of Bonds.

Redemption: The Bonds are subject to redemption as described herein.

Purpose: The Bonds are being issued to: (1) refund certain of the City's General Obligation Bonds and, (2) pay the costs and expenses related to the issuance of the Bonds.

Security: The Bonds are general obligations of the City. The full faith, credit and taxing power of the City have been pledged for the payment of the principal of and interest on the Bonds. Payment of the principal of and interest on the Bonds when due will be insured by a municipal bond insurance policy to be issued simultaneously with the delivery of the Bonds by

[BOND INSURER]

The Bonds are offered when, as and if issued and received by the Underwriter, subject to prior sale, withdrawal or modification of the offer without notice, and to the approval of legality of issuance of the Bonds by Kutak Rock, Pittsburgh, Pennsylvania, and Meyer, Darragh, Buckler, Bebenek & Eck, Pittsburgh, Pennsylvania, Co-Bond Counsel. Certain legal matters will be passed on by Peck, Shaffer & Williams, L.L.P., Pittsburgh, Pennsylvania, as Disclosure Counsel, and for the City by its Solicitor, Jacqueline Morrow, Esquire. It is expected that the Bonds will be available for delivery to DTC in book-entry form in New York, New York on or about December 31, 1996.

EXHIBIT

Grant Street Advisors acted as financial advisor to the City.

Sealed bids will be received by the Office of the City Controller, City-County Building, First Floor, Grant Street, Pittsburgh, Pennsylvania 15219 until 10:30 a.m., Prevailing Eastern Time, Tuesday, December 3, 1996, in accordance with the Notice of Sale dated November 22, 1996.

This Official Statement is dated December ____, 1996.

financial consultants advising municipal and non-profit enterprises

*Preliminary, subject to change

**MATURITY SCHEDULE
City of Pittsburgh**

(Commonwealth of Pennsylvania)

**\$167,440,000*
General Obligation Refunding Bonds
Series A of 1996**

Maturity (March 1)	Principal Amount	Interest Rate	Price	Yield	Maturity (March 1)	Principal Amount	Interest Rate	Price	yield
1998					2003				
1999					2004				
2000	\$355,000	4.100%	99.845%	4.150%	2005	\$ 485,000	4.875%	99.396%	4.950%
2001	375,000	4.200%	99.803%	4.250%	2006	510,000	5.000%	99.145%	5.100%
2002	390,000	4.300%	99.532%	4.400%	2007	530,000	5.100%	99.095%	5.200%

*Preliminary, subject to change.

CITY OF PITTSBURGH, PENNSYLVANIA

MAYOR
Tom Murphy

MEMBERS OF CITY COUNCIL
Jim Ferlo, President

Dan Cohen Bob O'Connor

Joseph Cusick Dan Onorato

Alan Hertzberg Eugene Ricciardi

Valerie McDonald Sala Udin

CONTROLLER
Tom Flaherty

DIRECTOR OF FINANCE
Paul Hennigan

DIRECTOR
OFFICE OF BUDGET AND MANAGEMENT
David Y. Miller, Ph.D.

CITY SOLICITOR
Jacqueline Morrow, Esquire

CO-BOND COUNSEL

Kutak Rock
Pittsburgh, Pennsylvania
and
Meyer, Darragh, Buckler, Bebenek & Eck
Pittsburgh, Pennsylvania

DISCLOSURE COUNSEL
Peck, Shaffer & Williams, L.L.P.
Pittsburgh, Pennsylvania

PAYING AGENT

Mellon Bank, N.A.
Pittsburgh, Pennsylvania

FINANCIAL ADVISOR

Grant Street Advisors
Pittsburgh, Pennsylvania

UNDERWRITER

No dealer, broker, salesperson or other person has been authorized by the City to give any information or to make any representation in connection with the Bonds or the matters described herein, other than those contained in this Official Statement, and, if given or made, such other information or representation must not be relied upon as having been authorized by any of the foregoing. This Official Statement does not constitute an offer to sell or the solicitation of an offer to buy nor shall there be any sale of the Bonds by any person in any jurisdiction in which it is unlawful for such person to make such offer, solicitation, or sale.

This Official Statement is not to be construed as a contract or agreement between the City and the purchasers or holders of any of the Bonds. Any statements made in this Official Statement involving matters of opinion whether or not expressly so stated, are intended merely as opinion and not as representations of fact. The information contained herein is subject to change without notice and neither the delivery of this Official Statement nor any sale made hereunder shall, under any circumstances, create any implication that there has been no change in the affairs of the City, or its agencies and authorities, since the date hereof.

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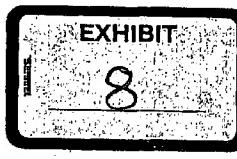
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For assistance, call (412) 391-7886

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Please direct questions and comments to Administrator@MuniAuction.com

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<address>Please direct questions and comments to <a href="mailto:Administrator@MuniAuction.com">Administrator@MuniAuction.com</a><br>
</address>
</body></html>
```



MuniAuction

Incorrect ID

Sorry. You entered an incorrect ID. Please hit the BACK button to return to the Registration Page.

For assistance, call (412) 391-7686.

Exit to: [MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com

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```
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<h2>Incorrect ID</h2> Sorry. You entered an incorrect ID.
Please hit the BACK button to return to the Registration Page.
<p>For assistance, call (412) 391-7686.<p>
<br>
<tr><td>Exit to:
<td><a href="http://storm.shodor.org/ma/index2.html">MuniAuction Home Page</a>
</table>
<hr>
<address>Please direct questions and comments to <a
href="mailto:Administrator@MuniAuction.com">Administrator@MuniAuction.com</a><b
r>
</address>
</body></html>
```

Verification

MuniAuction

Your ID number is 1234567.
Your firm is:

Mutual Fund
Boston, MA

Please verify that the above information is correct

YES NO

Have you checked to see if there have been any recent amendments to the Notice of Sale?

YES NO

Have you received the Preliminary Official Statement for this issue and have you had sufficient time to review it?

YES NO

Have you read Rules of MuniAuction and do you agree to abide by them?

YES NO

You must select one of the following bidding methods for this auction:

Price and Coupon Coupon and Yield

[Enter Auction](#)

Exit to: [MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com

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EXHIBIT

O

```
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method="POST" action="http://storm.shodor.org/cgi-bin/ma/bond.pl">
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<input type="hidden" name="corporation" value="Mutual Fund">
<input type="hidden" name="password" value="ma">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
<input type="hidden" name="auction_name" value="pitts-1996-a">
</p>
Your ID number is 1234567.<br>
Your firm is:<br>
<ul>Mutual Fund<br>
Boston, MA<p></ul>
<strong>Please verify that the above information is correct</strong><p>
<input type=radio name=info value=yes> YES
<input type=radio name=info value=no> NO<p>
<strong>Have you checked to see if there have been any recent amendments to the <a href="http://storm.shodor.org/ma/pitts-1996-a/nos.html">Notice of Sale</a>?</strong><p>
<input type=radio name=nos value=yes> YES
<input type=radio name=nos value=no> NO<p>
<strong>Have you received the <a href="http://storm.shodor.org/ma/pitts-1996-a/pos.html">Preliminary Official Statement</a> for this issue and have you had sufficient time to review it?</strong><p>
<input type=radio name=pos value=yes> YES
<input type=radio name=pos value=no> NO<p>
<strong>Have you read <a href="http://storm.shodor.org/ma/rules.html">Rules of MuniAuction</a> and do you agree to abide by them?</strong><p>
<input type=radio name=rules value=yes> YES
<input type=radio name=rules value=no> NO<p>
<strong>You must select one of the following bidding methods for this auction:</strong><p>
<input type=radio name=combo value=bid-pc> Price and Coupon
<input type=radio name=combo value=bid-cy> Coupon and Yield<p>

<input type=submit name=begin value="Enter Auction">
</form>
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<tr><td>Exit to:
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<address>Please direct questions and comments to <a
href="mailto:Administrator@MuniAuction.com">Administrator@MuniAuction.com</a><b
r>
</address>
</body></html>
```

Error

MuniAuction

You cannot enter the auction at this time. For assistance, call (412) 391-7686, or email the Administrator by clicking on the link at the bottom of the page.

Go to: [Notice Of Sale, Preliminary Official Statement, Rules of MuniAuction, MuniAuction Homepage](#)
Exit to: [MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com

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EXHIBIT

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(412) 391-7686, or email the Administrator by clicking on the link
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Statement</a>,
<a href="http://storm.shodor.org/ma/rules.html">Rules of MuniAuction</a>,
<a href="http://storm.shodor.org/ma/index2.html">MuniAuction Homepage</a>
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<tr><td>Exit to:
<td><a href="http://storm.shodor.org/ma/index2.html">MuniAuction Home Page</a>
</table>
<hr>
<address>Please direct questions and comments to <a href="mailto:Administrator@MuniAuction.com">Administrator@MuniAuction.com</a><b>r</b>
</address>
</body></html>
```

mError

Sorry, you cannot enter the auction until the following conditions are met:

- You have checked to see if there have been any recent amendments to the Notice of Sale
- You have received the Preliminary Official Statement for this issue and have had time to review it
- You have read Rules of MuniAuction and agree to abide by them
- You have read Rules of MuniAuction and agree to abide by them

Please hit the BACK button to return to the Verification Page.

Go to: [Notice Of Sale](#), [Preliminary Official Statement](#), [Rules of MuniAuction](#), [MuniAuction Homepage](#)
Exit to: [MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com

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<body bgcolor="#ffffff" link="#970000" vlink="#970000">

<p>Sorry, you cannot enter the auction until the following conditions are met:<p>
<li> You have checked to see if there have been any recent amendments to the Notice of Sale</li><p>
<li> You have received the Preliminary Official Statement for this issue and have had time to review it</li><p>
<li> You have read Rules of MuniAuction and agree to abide by them</li><p>
Please hit the BACK button to return to the Verification Page.<p>
<p><hr>
<table border=0 cellspacing=0 cellpadding=0>
<tr><td>Go to: <td><a href="http://storm.shodor.org/ma/pitts-1996-a/nos.html">Notice Of Sale</a>,
<a href="http://storm.shodor.org/ma/pitts-1996-a/pos.html">Preliminary Official Statement</a>,
<a href="http://storm.shodor.org/ma/rules.html">Rules of MuniAuction</a>,
<a href="http://storm.shodor.org/ma/index2.html">MuniAuction Homepage</a>
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<td><a href="http://storm.shodor.org/ma/index2.html">MuniAuction Home Page</a>
</table>
<hr>
<address>Please direct questions and comments to <a href="mailto:Administrator@MuniAuction.com">Administrator@MuniAuction.com</a><b>r</b>
</address>
</body></html>
```

Auction

MuniAuction

Auction Date: Tue Dec 3, 1996 Start: 10:30 am End: 10:45 am Time Now: 11:16:37 am

\$167,440,000*

City of Pittsburgh, Pennsylvania
General Obligation Refunding Bonds, Series A of 1996

Name of firm submitting bid: Mutual Fund

[Calculate / Refresh](#)

[Submit Bids](#)

Due	Principal Amount*	Price	Coupon	Your Yield	Best Yield	Your Status
March 1, 1998	\$15,285,000	[] %	[] %		No Bid	Not Leader
March 1, 1999	\$15,890,000	[] %	[] %		No Bid	Not Leader
March 1, 2000	\$15,225,000	[] %	[] %		No Bid	Not Leader
March 1, 2001	\$15,860,000	[] %	[] %		No Bid	Not Leader
March 1, 2002	\$16,540,000	[] %	[] %		No Bid	Not Leader
March 1, 2003	\$17,255,000	[] %	[] %		No Bid	Not Leader
March 1, 2004	\$18,025,000	[] %	[] %		No Bid	Not Leader
March 1, 2005	\$18,850,000	[] %	[] %		No Bid	Not Leader
March 1, 2006	\$19,720,000	[] %	[] %		No Bid	Not Leader
March 1, 2007	\$14,790,000	[] %	[] %		No Bid	Not Leader

[Calculate / Refresh](#)

[Submit Bids](#)

*Preliminary, subject to change

Go to: [Notice Of Sale](#), [Preliminary Official Statement](#), [Rules of MuniAuction](#)
Exit to: [MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com

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</center>
</pre>
<form name="form_name"
method="POST" action="http://storm.shodor.org/cgi-bin/ma/bond.pl">
<center>$167,440,000<sup>*</sup><br>
City of Pittsburgh, Pennsylvania<br>General Obligation Refunding Bonds, Series A of
1996<br></center>
<input type="hidden" name="auction_name" value="pitts-1996-a">
<input type="hidden" name="info" value="yes">
<input type="hidden" name="nos" value="yes">
<input type="hidden" name="pos" value="yes">
<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="bid-pc">
<input type="hidden" name="corporation" value="Mutual Fund">
<input type="hidden" name="id" value="1234567">
<input type="hidden" name="password" value="ma">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
<p>Name of firm submitting bid: <b>Mutual Fund</b><p>
<input type=submit name="calculate" value="Calculate / Refresh">
  &nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps
  &nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps
  &nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps
  &nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps&nbsps
  <input type=submit name="submit_bid" value="Submit Bids">
<br>
<p>
<table border=0 cellspacing=5 cellpadding=5>
<tr><th>Due<th>Principal<br>Amount<sup>*</sup><th>Price
<th>Coupon<th>Your<br>Yield<th>Best<br>Yield<th>Your<br>Status
<tr>
<td align=center>March 1, 1998</td>
<td align=center>$15,285,000</td>
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```
<td align=center><input name="price0"
size=7 maxlength=11>%</td>
<td align=center><input name="interest0"
size=5 maxlength=5>%</td>
<td align=center>
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Not Leader
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<tr>
<td align=center>March 1, 1999</td>
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<td align=center><input name="price1"
size=7 maxlength=11>%</td>
<td align=center><input name="interest1"
size=5 maxlength=5>%</td>
<td align=center>
</td>
<td align=center>
No Bid</td>
<td align=center>
Not Leader
</td>
</tr>
<tr>
<td align=center>March 1, 2000</td>
<td align=center>$15,225,000</td>
<td align=center><input name="price2"
size=7 maxlength=11>%</td>
<td align=center><input name="interest2"
size=5 maxlength=5>%</td>
<td align=center>
</td>
<td align=center>
No Bid</td>
<td align=center>
Not Leader
</td>
</tr>
```

```
<tr>
<td align=center>March 1, 2001</td>
<td align=center>$15,860,000</td>
<td align=center><input name="price3"
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<td align=center><input name="interest3"
size=5 maxlength=5>%</td>
<td align=center>
</td>
<td align=center>
No Bid</td>
<td align=center>
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</tr>
<tr>
<td align=center>March 1, 2002</td>
<td align=center>$16,540,000</td>
<td align=center><input name="price4"
size=7 maxlength=11>%</td>
<td align=center><input name="interest4"
size=5 maxlength=5>%</td>
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<td align=center>
No Bid</td>
<td align=center>
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<tr>
<td align=center>March 1, 2003</td>
<td align=center>$17,255,000</td>
<td align=center><input name="price5"
size=7 maxlength=11>%</td>
<td align=center><input name="interest5"
size=5 maxlength=5>%</td>
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</td>
<td align=center>
No Bid</td>
<td align=center>
```

Not Leader
</td>
</tr>
<tr>
<td align=center>March 1, 2004</td>
<td align=center>\$18,025,000</td>
<td align=center><input name="price6" size=7 maxlength=11>%</td>
<td align=center><input name="interest6" size=5 maxlength=5>%</td>
<td align=center>
</td>
<td align=center>
No Bid</td>
<td align=center>
Not Leader
</td>
</tr>
<tr>
<td align=center>March 1, 2005</td>
<td align=center>\$18,850,000</td>
<td align=center><input name="price7" size=7 maxlength=11>%</td>
<td align=center><input name="interest7" size=5 maxlength=5>%</td>
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</td>
<td align=center>
No Bid</td>
<td align=center>
Not Leader
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</tr>
<tr>
<td align=center>March 1, 2006</td>
<td align=center>\$19,720,000</td>
<td align=center><input name="price8" size=7 maxlength=11>%</td>
<td align=center><input name="interest8" size=5 maxlength=5>%</td>
<td align=center>
</td>

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<td align=center>
No Bid</td>
<td align=center>
Not Leader
</td>
</tr>
<tr>
<td align=center>March 1, 2007</td>
<td align=center>$14,790,000</td>
<td align=center><input name="price9"
size=7 maxlength=11>%</td>
<td align=center><input name="interest9"
size=5 maxlength=5>%</td>
<td align=center>
</td>
<td align=center>
No Bid</td>
<td align=center>
Not Leader
</td>
</tr>
</table>
<input type=submit name="calculate" value="Calculate / Refresh">
<input type=submit name="submit_bid" value="Submit Bids">
<p><sup>*</sup>Preliminary, subject to change
<p><hr>
<table border=0 cellspacing=0 cellpadding=0>
<tr><td>Go to: <td><a href="http://storm.shodor.org/ma/pitts-1996-a/nos.html">Notice Of Sale</a>,
<a href="http://storm.shodor.org/ma/pitts-1996-a/pos.html">Preliminary Official Statement</a>,
<a href="http://storm.shodor.org/ma/rules.html">Rules of MuniAuction</a>
<br>
<tr><td>Exit to:
<td><a href="http://storm.shodor.org/ma/index2.html">MuniAuction Home Page</a>
</table>
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<hr>
<address>Please direct questions and comments to Administrator@MuniAuction.com<b
 r>
</address>
</body></html>



MuniAuction

Sorry. You are trying to submit a worse bid than one you have already submitted.

Please hit the BACK button to return to the Auction Page.

Go to: [Notice Of Sale](#), [Preliminary Official Statement](#), [Rules of MuniAuction](#), [MuniAuction Homepage](#)
Exit to: [MuniAuction Home Page](#)

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EXHIBIT

13

m Auction

MuniAuction

Auction Date: Tue Dec 3, 1996 Start: 10:30 am End: 10:45 am Time Now: 11:41:39 am

\$167,440,000*
City of Pittsburgh, Pennsylvania
General Obligation Refunding Bonds, Series A of 1996

Name of firm submitting bid: Mutual Fund

Due	Principal Amount*	Price	Coupon	Your Yield	Best Yield	Your Status
March 1, 1998	\$15,285,000	[99.000] %	[4.000] %	5.083%	5.083%	Leader
March 1, 1999	\$15,890,000	[] %	[] %	No Bid	No Leader	
March 1, 2000	\$15,225,000	[] %	[] %	No Bid	No Leader	
March 1, 2001	\$15,860,000	[] %	[] %	No Bid	No Leader	
March 1, 2002	\$16,540,000	[] %	[] %	No Bid	No Leader	
March 1, 2003	\$17,255,000	[] %	[] %	No Bid	No Leader	
March 1, 2004	\$18,025,000	[] %	[] %	No Bid	No Leader	
March 1, 2005	\$18,850,000	[] %	[] %	No Bid	No Leader	
March 1, 2006	\$19,720,000	[] %	[] %	No Bid	No Leader	
March 1, 2007	\$14,790,000	[] %	[] %	No Bid	No Leader	

*Preliminary, subject to change

Go to: [Notice Of Sale](#), [Preliminary Official Statement](#), [Rules of MuniAuction](#)
Exit to: [MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com

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MuniAuction

Sorry. At least one of your bids was less than 98.0% of the corresponding principal.

Please hit the BACK button to return to the Auction Page.

Go to: [Notice Of Sale](#), [Preliminary Official Statement](#), [Rules of MuniAuction](#), [MuniAuction Homepage](#)
Exit to: [MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com

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EXHIBIT

14

mObservation

MuniAuction

Auction Date: Tue Dec 3, 1996 Start: 10:30 am End: 10:45 am Time Now: 11:00:32 am

\$167,440,000*
City of Pittsburgh, Pennsylvania
General Obligation Refunding Bonds, Series A of 1996

[Refresh](#)

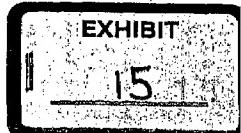
Due	Principal Amount*	Price	Coupon	Best Yield	Winner
March 1, 1998	\$15,285,000	No Bid	No Bid	No Bid	
March 1, 1999	\$15,890,000	No Bid	No Bid	No Bid	
March 1, 2000	\$15,225,000	No Bid	No Bid	No Bid	
March 1, 2001	\$15,860,000	No Bid	No Bid	No Bid	
March 1, 2002	\$16,540,000	No Bid	No Bid	No Bid	
March 1, 2003	\$17,255,000	No Bid	No Bid	No Bid	
March 1, 2004	\$18,025,000	No Bid	No Bid	No Bid	
March 1, 2005	\$18,850,000	No Bid	No Bid	No Bid	
March 1, 2006	\$19,720,000	No Bid	No Bid	No Bid	
March 1, 2007	\$14,790,000	No Bid	No Bid	No Bid	

[Refresh](#)

Go to: [MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com

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```
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<body bgcolor="#ffffff" link="#970000" vlink="970000">
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Auction Date: Tue Dec 3, 1996 Start: 10:30 am End: 10:45 am Time Now: 11:00:32 am
</center>
</pre>
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method="POST" action="http://storm.shodor.org/cgi-bin/ma/bond.pl">
<input type=hidden name=id value="6666666">
<input type=hidden name=corporation value="Issuer">
<input type=hidden name=password value="ma">
<input type=hidden name=auction_name value="pitts-1996-a">
<input type=hidden name=variable value="junk">
<input type=hidden name=variable2 value="junk">
<center>$167,440,000<sup>*</sup><br>
City of Pittsburgh, Pennsylvania<br>General Obligation Refunding Bonds, Series A of
1996<br></center>
<input type=submit name="observe" value="Refresh">
<table border=0 cellspacing=5 cellpadding=5>
<tr><th>Due<th>Principal<br>Amount<sup>*</sup><th>Price
<th>Coupon<th>Best Yield<th>Winner
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<td align=center>$15,285,000
<td align=center>
No Bid<td align=center>
No Bid<td align=center>
No Bid<td align=center>

<tr>
<td align=center>March 1, 1999
<td align=center>$15,890,000
<td align=center>
No Bid<td align=center>
No Bid<td align=center>
No Bid<td align=center>

<tr>
<td align=center>March 1, 2000
```

\$15,225,000	No Bid <td align="center">></td>	>	
March 1, 2001	\$15,860,000	No Bid <td align="center">></td>	>
March 1, 2002	\$16,540,000	No Bid <td align="center">></td>	>
March 1, 2003	\$17,255,000	No Bid <td align="center">></td>	>
March 1, 2004	\$18,025,000	No Bid <td align="center">></td>	>
March 1, 2005	\$18,850,000	No Bid <td align="center">></td>	>

No Bid<td align=center>
No Bid<td align=center>

<tr>
<td align=center>March 1, 2006
<td align=center>\$19,720,000
<td align=center>
No Bid<td align=center>
No Bid<td align=center>
No Bid<td align=center>

<tr>
<td align=center>March 1, 2007
<td align=center>\$14,790,000
<td align=center>
No Bid<td align=center>
No Bid<td align=center>
No Bid<td align=center>

</table>
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<input type=hidden name="auction_name" value="pitts-1996-a">
<input type=submit name="observe" value="Refresh">
◆
◆
Go to:
MuniAuction Home Page
<hr>
<address>Please direct questions and comments to Administrator@MuniAuction.com<b
r>
</address>
</body></html>



Administration

MuniAuction

Auction Administration

Auction Management	Registration
Auction: pitts-1996-a	List Current Registrants
<input type="button" value="View Current Auction Leaders"/>	<input type="button" value="Remove a Bidder"/>
<input type="button" value="Restart Auction"/>	<input type="button" value="Remove All Bidders"/>
<input type="button" value="Modify an Existing Auction"/>	<input type="button" value="Add a New Bidder"/>
<input type="button" value="Create New Auction"/>	

Go to: [MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com

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EXHIBIT

16

```
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<title>Auction Administration</title></head>
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<input type=hidden name=password value="ma">
<input type=hidden name=corporation value="System Administrator">
<input type=hidden name=info value="yes">
<input type=hidden name=nos value="yes">
<input type=hidden name=pos value="yes">
<input type=hidden name=rules value="yes">
<input type=hidden name=combo value="bid-pc">
<input type=hidden name=variable value=junk>
<input type=hidden name=variable2 value=junk>

<CENTER>
<TABLE BORDER=6 CELLSPACING=5 CELLPADDING=5>
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Auction Management<br>
</th>
<th VALIGN=MIDDLE ALIGN=CENTER>
Registration</th>
</tr>

<tr>
<td VALIGN=MIDDLE ALIGN=CENTER>
Auction: <select name=auction_name>
<option>pitts-1996-a
<option>HFA-1996
<option>statePFA-1996-b
<option>Atlantis-1996-c
</select>
<td VALIGN=MIDDLE ALIGN=CENTER>
<input type=submit name=listfirms value="List Current Registrants"></td>
</tr>

<tr>
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<input type=submit name=view value="View Current Auction Leaders"></td>
<td VALIGN=MIDDLE ALIGN= CENTER>
<input type=submit name=removeOne value="Remove a Bidder"></td>
</tr>

<tr>
<td VALIGN=MIDDLE ALIGN= CENTER>
<input type=submit name=restart value="Restart Auction"></td>
<td VALIGN=MIDDLE ALIGN= CENTER>
<input type=submit name=removeAll value="Remove All Bidders"></td>
</tr>

<tr>
<td VALIGN=MIDDLE ALIGN= CENTER>
<input type=submit name=modify_auction value="Modify an Existing Auction"></td>
<td VALIGN=MIDDLE ALIGN= CENTER>
<input type=submit name=new value="Add a New Bidder"></td>
</tr>

</table><P>

<input type=submit name=createnew value="Create New Auction"></td>
</CENTER>
</form>
<!--
Go to: <a href="http://storm.shodor.org/ma/index2.html">
MuniAuction Home Page</a>
<hr>
<address>Please direct questions and comments to <a
href="mailto:Administrator@MuniAuction.com">Administrator@MuniAuction.com</a><b>
r</b>
</address>
</body></html>
```

Administration

MuniAuction

Auction Date: Tue Dec 3, 1996 Start: 10:30 am End: 10:45 am Time Now: 12:02:06 pm

\$167,440,000*
City of Pittsburgh, Pennsylvania
General Obligation Refunding Bonds, Series A of 1996

Due	Principal Amount*	Price	Coupon	Best Yield	Winner	Winner's ID
March 1, 1998	\$15,285,000	99.000%	4.000%	5.083%	Mutual	1234567
March 1, 1999	\$15,890,000	No Bid	No Bid	No Bid	No Bid	
March 1, 2000	\$15,225,000	No Bid	No Bid	No Bid	No Bid	
March 1, 2001	\$15,860,000	No Bid	No Bid	No Bid	No Bid	
March 1, 2002	\$16,540,000	No Bid	No Bid	No Bid	No Bid	
March 1, 2003	\$17,255,000	No Bid	No Bid	No Bid	No Bid	
March 1, 2004	\$18,025,000	No Bid	No Bid	No Bid	No Bid	
March 1, 2005	\$18,850,000	No Bid	No Bid	No Bid	No Bid	
March 1, 2006	\$19,720,000	No Bid	No Bid	No Bid	No Bid	
March 1, 2007	\$14,790,000	No Bid	No Bid	No Bid	No Bid	

Go to: [Notice Of Sale](#), [Preliminary Official Statement](#), [Rules of MuniAuction](#), [MuniAuction Homepage](#)

Please direct questions and comments to Administrator@MuniAuction.com

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Auction Date: Tue Dec 3, 1996 Start: 10:30 am End: 10:45 am Time Now: 11:53:08 am
</center>
</pre>
<center>$167,440,000<sup>*</sup><br>
City of Pittsburgh, Pennsylvania<br>General Obligation Refunding Bonds, Series A of
1996<br></center>
<table border=0 cellspacing=5 cellpadding=5>
<tr><th>Due<th>Principal<br>Amount<sup>*</sup><th>Price
<th>Coupon<th>Best Yield<th>Winner<th>Winner's<br>ID
<tr>
<td align=center>March 1, 1998</td>
<td align=center>$15,285,000</td>
<td align=center>
99.000%</td>
<td align=center>
4.000%</td>
<td align=center>
5.083%<td align=center>
Mutual
</td>
<td align=center>
1234567
</td>
</tr>
<tr>
<td align=center>March 1, 1999</td>
<td align=center>$15,890,000</td>
<td align=center>
No Bid</td>
<td align=center>
No Bid</td>
<td align=center>
No Bid<td align=center>
</td>
<td align=center>
```

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</td>
</tr>
<tr>
<td align=center>March 1, 2000</td>
<td align=center>$15,225,000</td>
<td align=center>
No Bid</td>
<td align=center>
No Bid</td>
<td align=center>
No Bid<td align=center>

</td>
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<tr>
<td align=center>March 1, 2001</td>
<td align=center>$15,860,000</td>
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No Bid</td>
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No Bid</td>
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No Bid<td align=center>

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<td align=center>

</td>
</tr>
<tr>
<td align=center>March 1, 2002</td>
<td align=center>$16,540,000</td>
<td align=center>
No Bid</td>
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No Bid</td>
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No Bid<td align=center>
```

```
</td>
<td align=center>

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</tr>
<tr>
<td align=center>March 1, 2003</td>
<td align=center>$17,255,000</td>
<td align=center>
No Bid</td>
<td align=center>
No Bid</td>
<td align=center>
No Bid<td align=center>

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<tr>
<td align=center>March 1, 2004</td>
<td align=center>$18,025,000</td>
<td align=center>
No Bid</td>
<td align=center>
No Bid</td>
<td align=center>
No Bid<td align=center>

</td>
<td align=center>

</td>
</tr>
<tr>
<td align=center>March 1, 2005</td>
<td align=center>$18,850,000</td>
<td align=center>
No Bid</td>
<td align=center>
No Bid</td>
```

```
<td align=center>
No Bid<td align=center>

</td>
<td align=center>

</td>
</tr>
<tr>
<td align=center>March 1, 2006</td>
<td align=center>$19,720,000</td>
<td align=center>
No Bid</td>
<td align=center>
No Bid</td>
<td align=center>
No Bid<td align=center>

</td>
<td align=center>

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<tr>
<td align=center>March 1, 2007</td>
<td align=center>$14,790,000</td>
<td align=center>
No Bid</td>
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No Bid</td>
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No Bid<td align=center>

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[Notice Of Sale](http://storm.shodor.org/ma/pitts-1996-a/nos.html),
[Preliminary Official Statement](http://storm.shodor.org/ma/pitts-1996-a/pos.html),
[Rules of MuniAuction](http://storm.shodor.org/ma/rules.html),
[MuniAuction Homepage](http://storm.shodor.org/ma/index2.html)

</table>

<hr>

<address>Please direct questions and comments to Administrator@MuniAuction.comr

</address>

</body></html>

Administration MuniAuction

Are you sure you want to restart Auction pitts-1996-a?

[Restart Auction Now](#)

Go to: [MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com

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```
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<title>AUCTION ADMINISTRATION</title></head>
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<input type="hidden" name="info" value="yes">
<input type="hidden" name="nos" value="yes">
<input type="hidden" name="pos" value="yes">
<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="bid-pc">
<input type="hidden" name="corporation" value="System Administrator">
<input type="hidden" name="id" value="JSASTAFYTAFYG">
<input type="hidden" name="password" value="ma">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
<h2>Are you sure you want to restart Auction pitts-1996-a?</h2>
<input type="submit" name="restartnow" value="Restart Auction Now">
</form>
<hr>
Go to: <a href="http://storm.shodor.org/ma/index2.html">
MuniAuction Home Page</a>
<hr>
<address>Please direct questions and comments to <a
href="mailto:Administrator@MuniAuction.com">Administrator@MuniAuction.com</a><b>r</b>
</address>
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<input type="hidden" name="rules" value="yes">
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<input type="hidden" name="corporation" value="System Administrator">
<input type="hidden" name="id" value="JSASTAFYTAFYG">
<input type="hidden" name="password" value="ma">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
<h2>Are you sure you want to restart Auction pitts-1996-a?</h2>
<input type=submit name=restartnow value="Restart Auction Now">
</form>
<br>
Go to: <a href="http://storm.shodor.org/ma/index2.html">
MuniAuction Home Page</a>
<hr>
<address>Please direct questions and comments to <a
href="mailto:Administrator@MuniAuction.com">Administrator@MuniAuction.com</a><b>r</b>
</address>
</body></html>
```

m Administration

MuniAuction

Modify Auction pitts-1996-a

Date of Auction:Month: Day: Year: Start time: : End time: : **Settlement date:**Month: Day: Year: **Dated (issue) date:**Month: Day: Year: **Date of first interest payment:**Month: Day: Year:

City of Pittsburgh, Pennsylvania
General Obligation Refunding Bonds, Series A of 1996

[Modify bond issues](#)[Go to: MuniAuction Home Page](#)[*Please direct questions and comments to Administrator@M*](#)

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<html><head>
<title>AUCTION ADMINISTRATION</title></head>
<body bgcolor="#ffffff" link="#970000" vlink="970000">
<img src=http://storm.shodor.org/ma/images/ADMNTNHD.GIF>
<form name="form_name"
method="POST" action="http://storm.shodor.org/cgi-bin/ma/bond.pl">
<input type="hidden" name="auction_name" value="pitts-1996-a">
<input type="hidden" name="info" value="yes">
<input type="hidden" name="nos" value="yes">
<input type="hidden" name="pos" value="yes">
<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="bid-pc">
<input type="hidden" name="corporation" value="System Administrator">
<input type="hidden" name="id" value="JSASTAFYTAFYG">
<input type="hidden" name="password" value="ma">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
<input type=hidden name="newauction_month0" value="March">
<input type=hidden name="newauction_day0" value="1">
<input type=hidden name="newauction_year0" value="1998">
<input type=hidden name="newauction_price0" value="15,285,000">
<input type=hidden name="newauction_month1" value="March">
<input type=hidden name="newauction_day1" value="1">
<input type=hidden name="newauction_year1" value="1999">
<input type=hidden name="newauction_price1" value="15,890,000">
<input type=hidden name="newauction_month2" value="March">
<input type=hidden name="newauction_day2" value="1">
<input type=hidden name="newauction_year2" value="2000">
<input type=hidden name="newauction_price2" value="15,225,000">
<input type=hidden name="newauction_month3" value="March">
<input type=hidden name="newauction_day3" value="1">
<input type=hidden name="newauction_year3" value="2001">
<input type=hidden name="newauction_price3" value="15,860000">
<input type=hidden name="newauction_month4" value="March">
<input type=hidden name="newauction_day4" value="1">
<input type=hidden name="newauction_year4" value="2002">
<input type=hidden name="newauction_price4" value="16540000">
<input type=hidden name="newauction_month5" value="March">
<input type=hidden name="newauction_day5" value="1">
<input type=hidden name="newauction_year5" value="2003">
<input type=hidden name="newauction_price5" value="17,255,000">
<input type=hidden name="newauction_month6" value="March">
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```
<input type=hidden name="newauction_day6" value="1">
<input type=hidden name="newauction_year6" value="2004">
<input type=hidden name="newauction_price6" value="18,025,000">
<input type=hidden name="newauction_month7" value="March">
<input type=hidden name="newauction_day7" value="1">
<input type=hidden name="newauction_year7" value="2005">
<input type=hidden name="newauction_price7" value="18850000">
<input type=hidden name="newauction_month8" value="March">
<input type=hidden name="newauction_day8" value="1">
<input type=hidden name="newauction_year8" value="2006">
<input type=hidden name="newauction_price8" value="19720000">
<input type=hidden name="newauction_month9" value="March">
<input type=hidden name="newauction_day9" value="1">
<input type=hidden name="newauction_year9" value="2007">
<input type=hidden name="newauction_price9" value="14790000">
<h2><center>Modify Auction pitts-1996-a</center></h2>

<strong>Date of Auction:</strong><br>
Month:
<select name="newauction_startmonth">
<option selected>December
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
<option>December
</select>
Day:
<input name="newauction_startday" value="3" size=2 maxlength=2>
Year:
<input name="newauction_startyear" value="1996" size=4 maxlength=4><br>
Start time:
<input name="newauction_starthour" value="10" size=2 maxlength=2>:
<input name="newauction_startmin" value="30" size=2 maxlength=2>
End time:
```

```
<input name="newauction_enuhour" value="10" size=2 maxlength=2>
<input name="newauction_endmin" value="45" size=2 maxlength=2>
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<strong>Settlement date:</strong><br>
Month:
<select name="settlement_month">
<option selected>December
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
<option>December
</select>
Day:
<input name="settlement_day" value="31" size=2 maxlength=2>
Year:
<input name="settlement_year" value="1996" size=4 maxlength=4><p>

<strong>Dated (issue) date:</strong><br>
Month:
<select name="issue_month">
<option selected>December
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
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<option>December
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Day:

Year:
<p>

Date of first interest payment:

Month:

<select name="firstPay_month">
<option selected>March
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
<option>December
</select>

Day:

Year:
<p>

Number of bonds to be offered:

<input name="newauction_numbonds" value="10" size=2 maxlength=2>

<p>

Auction name: <input name="newauction_name" value="pitts-1996-a"><p>

Auction info:

<textarea name="newauction_info" rows=5 cols=60>City of Pittsburgh, Pennsylvania
General Obligation Refunding Bonds, Series A of 1996</textarea>

<p><input type=submit name=modify_bonds value="Modify bond issues">

<p>

Go to:
MuniAuction Home Page

<hr>

<address>Please direct questions and comments to <a

Administrator@MuniAuction.comr</address> <HR><H3>Transfer interrupted!</H3>



MuniAuction

Current Registrants

ID Number	Organization	Abbreviation	Address
1234567	Mutual Fund	Mutual	Boston, MA
7654321	Insurance Company	Insurance	Hartford, CT
7777777	Underwriting Firm	Underwriter	New York City, NY
6666666	City of Pittsburgh	Pgh	Pittsburgh, PA

Go to: [MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com.

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```
<html><head>
<title>AUCTION ADMINISTRATION</title></head>
<body bgcolor="#ffffff" link="#970000" vlink="970000">

<h1><center>Current Registrants</center></h1>
<table border=0 cellspacing=5 cellpadding=5>
<tr><th>ID Number<th>Organization<th>Abbreviation<th>Address
<tr><td>1234567<td>Mutual Fund<td>Mutual
<td>Boston, MA
<tr><td>7654321<td>Insurance Company<td>Insurance
<td>Hartford, CT
<tr><td>7777777<td>Underwriting Firm<td>Underwriter
<td>New York City, NY
<tr><td>6666666<td>City of Pittsburgh<td>Pgh<td>Pittsburgh, PA
</table>
<hr>
Go to: <a href="http://storm.shodor.org/ma/index2.html">
MuniAuction Home Page</a>
<hr>
<address>Please direct questions and comments to <a
href="mailto:Administrator@MuniAuction.com">Administrator@MuniAuction.com</a><b>r</b>
</address>
</body></html>
```



MuniAuction

Remove a Bidder

Enter the ID number of the bidder you plan to remove:

Go to: [MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com

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<html><head>
<title>AUCTION ADMINISTRATION</title></head>
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<form name="form_name"
method="POST" action="http://storm.shodor.org/cgi-bin/ma/bond.pl">
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<input type="hidden" name="info" value="yes">
<input type="hidden" name="nos" value="yes">
<input type="hidden" name="pos" value="yes">
<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="bid-pc">
<input type="hidden" name="corporation" value="System Administrator">
<input type="hidden" name="id" value="JSASTAFYTAFYG">
<input type="hidden" name="password" value="ma">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
<h1><center>Remove a Bidder</center></h1>
Enter the ID number of the bidder you plan to remove:<p>
<input name="toBeRemoved"><p><input type="submit" name="removeNow" value="Remove
Bidder">
<hr>
Go to: <a href="http://storm.shodor.org/ma/Index2.html">
MuniAuction Home Page</a>
<hr>
<address>Please direct questions and comments to <a
href="mailto:Administrator@MuniAuction.com">Administrator@MuniAuction.com</a><b>
r>
</address>
</body></html>
```

Administration MuniAuction

Are you sure you want to remove all bidders from the Auctions?

[Remove All Bidders](#)

Go to: [MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com

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<html><head>
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    <input type="hidden" name="rules" value="yes">
    <input type="hidden" name="combo" value="bid-pc">
    <input type="hidden" name="corporation" value="System Administrator">
    <input type="hidden" name="id" value="JSASTAFYTAFYG">
    <input type="hidden" name="password" value="ma">
    <input type="hidden" name="variable" value="junk">
    <input type="hidden" name="variable2" value="junk">
    <h1><center>Are you sure you want to remove all bidders from
the Auctions?</center></h1>
    <input type=submit name=removeAllNow value="Remove All Bidders">
  </form>
  <p>
Go to: <a href="http://storm.shodor.org/ma/index2.html">
MuniAuction Home Page</a>
<hr>
<address>Please direct questions and comments to <a
href="mailto:Administrator@MuniAuction.com">Administrator@MuniAuction.com</a><b>
r</b>
</address>
</body></html>
```

Administration

MuniAuction

Add a New Bidder

ID No.	<input type="text"/>
Corporation:	<input type="text"/>
Abbreviation:	<input type="text"/>
Address:	<input type="text"/>

Go to: [MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com

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<input type="hidden" name="nos" value="yes">
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<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="bid-pc">
<input type="hidden" name="corporation" value="System Administrator">
<input type="hidden" name="id" value="JSASTAFYTAFYG">
<input type="hidden" name="password" value="ma">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
<h1>Add a New Bidder</h1>
<table border=0 cellspacing=0 cellpadding=0>
<tr><td><strong>ID No.</strong> <td><input name="newid"><br>
<tr><td><strong>Corporation:</strong> <td><input name="newcorp"><br>
<tr><td><strong>Abbreviation:</strong> <td><input name="newabbr"><br>
<tr><td><strong>Address:</strong> <td><input name="newaddress"><br>
</table>
<input type=submit name=addnew value="Add New Bidder">
<input type=reset value="Reset Form">
</form>
<p>
Go to: <a href="http://storm.shodor.org/ma/index2.html">
MuniAuction Home Page</a>
<hr>
<address>Please direct questions and comments to <a
href="mailto:Administrator@MuniAuction.com">Administrator@MuniAuction.com</a><b>r</b>
</address>
</body></html>
```

mAdministration

MuniAuction

Create a New Auction

Date of Auction:

Month: January Day: Year:
Start time: End time: :

Settlement date:

Month: January Day: Year:

Dated (issue) date:

Month: January Day: Year:

Date of first interest payment:

Month: January Day: Year:

Number of bonds to be offered:

Auction name:

Auction info:

<input type="button" value="←"/>	<input type="button" value="→"/>

Go to: [MuniAuction Home Page](#)

Please direct questions and comments to Administrator@MuniAuction.com

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```
<html><head>
<title>AUCTION ADMINISTRATION</title></head>
<body bgcolor="#ffffff" link="#970000" vlink="970000">
<img src=http://storm.shodor.org/ma/images/ADMNTNHD.GIF>
<form name="form_name"
method="POST" action="http://storm.shodor.org/cgi-bin/ma/bond.pl">
<input type="hidden" name="auction_name" value="pitts-1996-a">
<input type="hidden" name="info" value="yes">
<input type="hidden" name="nos" value="yes">
<input type="hidden" name="pos" value="yes">
<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="bid-pc">
<input type="hidden" name="corporation" value="System Administrator">
<input type="hidden" name="id" value="JSASTAFYTAFYG">
<input type="hidden" name="password" value="ma">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
<h2><center>Create a New Auction</center></h2>

<strong>Date of Auction:</strong><br>
Month:
<select name="newauction_startmonth">
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
<option>December
</select>
Day:
<input name="newauction_startday" size=2 maxlength=2>
Year:
<input name="newauction_startyear" size=4 maxlength=4><br>
Start time:
<input name="newauction_starthour" size=2 maxlength=2>;
<input name="newauction_startmin" size=2 maxlength=2>
```

End time:
<input name="newauction_endhour" size=2 maxlength=2>
<input name="newauction_endmin" size=2 maxlength=2>

Settlement date:

Month:
<select name="settlement_month">
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
<option>December
</select>
Day:
<input name="settlement_day" size=2 maxlength=2>
Year:
<input name="settlement_year" size=4 maxlength=4><p>

Dated (issue) date:

Month:
<select name="issue_month">
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
<option>December
</select>

Day:

Year:
<p>

Date of first interest payment:

Month:
<select name="firstPay_month">
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
<option>December
</select>

Day:

Year:
<p>

Number of bonds to be offered:

<p>

Auction name: <input name="newauction_name"><p>

Auction info:

<textarea name="newauction_info" rows=5 cols=60></textarea>

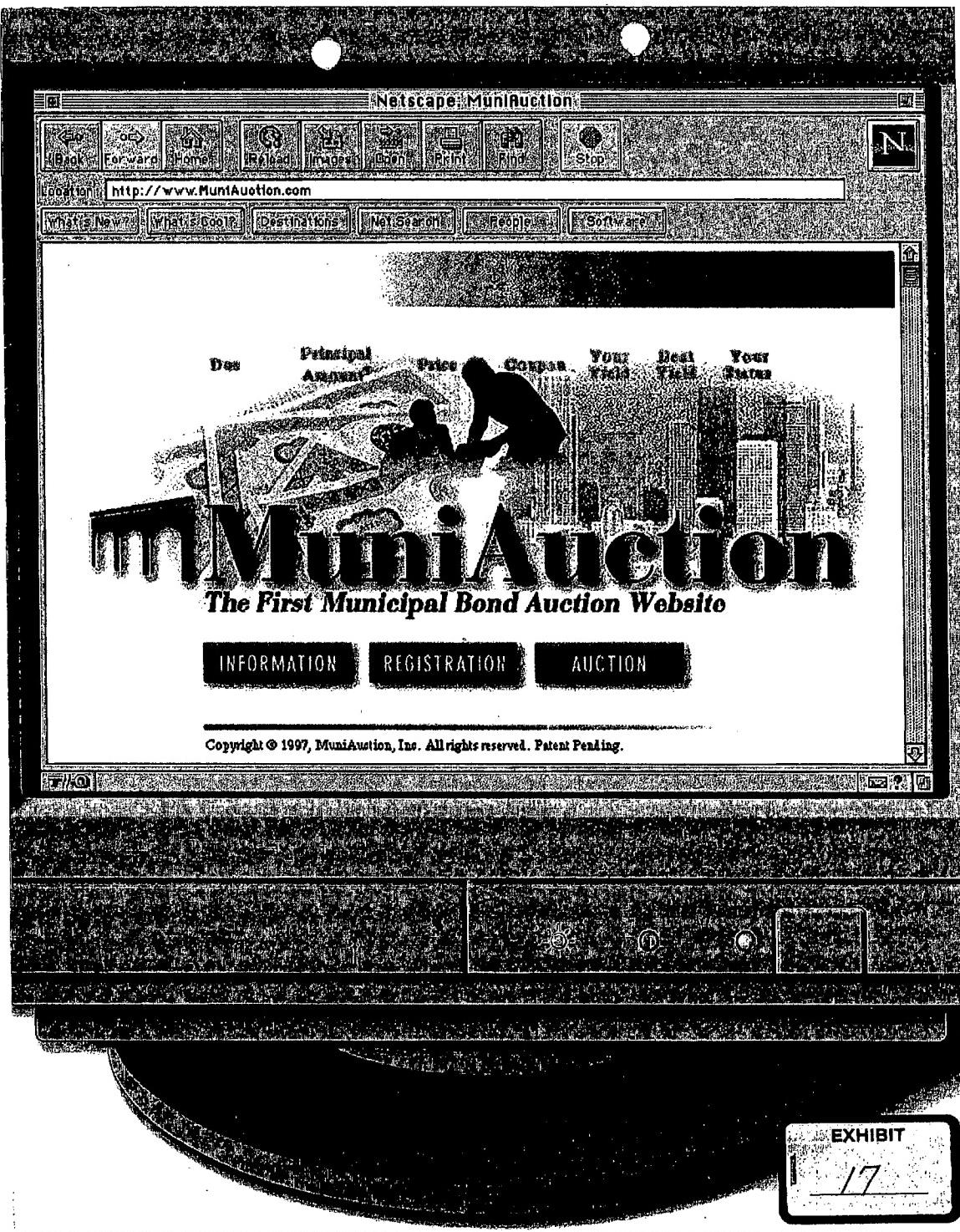
<p><input type=submit name=enterbonds value="Enter bond issues">

<p>

Go to:
MuniAuction Home Page

<hr>

<address>Please direct questions and comments to Administrator@MuniAuction.com
<r>



MuniAuctionSM Internet Website is where electronic auctions are conducted in real time. Both underwriters and institutional investors compete for the purchase of each and every maturity. *In short, MuniAuction means: more bids, more competition, lower rates, lower costs!*

With nearly 50% of all new municipal bond issues guaranteed by AAA-rated insurance policies, tax-free bonds have become "commodities" that can—and should—be sold via competitive bid.

Nevertheless, only 25% of new issues are competitively bid; partly because current competitive bidding procedures are administratively complicated, technologically inefficient and result in only marginally lower interest rates.

MuniAuction, The First Municipal Bond Auction Website, provides a solution to these problems—including materially lower interest rates.

PROBLEM: Competitive Bid Process Today



What's wrong with this process?

- ① does not allow bidders to see other bids and improve their own—only one bid allowed per bidder
- ② does not allow "maturity-by-maturity" bids—only "all or none"
- ③ does not allow institutional investors to submit bids—only underwriters bid
- ④ depends upon unreliable fax transmissions—a problem for issuers and bidders alike

SOLUTION: The MuniAuction Competitive Bid Process



What's different about MuniAuction?

- ① allows bidders to see other bids and improve bids
- ② allows "maturity by maturity" bids and "all or none"
- ③ allows institutional investors, as well as underwriters, to submit bids
- ④ eliminates the problematic fax
- ⑤ works on any computer without special software—just access the Internet



Just log onto the Internet, and go to
MuniAuction.com.

Savings¹

Eliminates Management Fees²

\$0.25 - \$1.50 per bond

Reduces or Eliminates Underwriter Sales Commission

\$2.50 - \$7.50 per bond

Lowers Interest Rates

5 - 10 Basis Points

Simplifies Bid Preparation and Administration

Issuer's & Bidder's Time

¹ Estimated Savings are indicative of potential savings; however they are not guarantees of actual results.

² Compared to negotiated sales.

How does MuniAuction work?

Auction Selections Webpage

SELECT	Issuer	State	Description	Size*	Auction Date*	Start Time*
<input type="radio"/>	City of Pittsburgh	PA	General Obligation Refunding Bonds, Series A of 1996	\$167,440,000	12/3/96	10:30 a.m. EST
<input type="radio"/>	Housing Finance Authority	TX	Mortgage Revenue Bonds, Series of 1996	\$78,500,000	12/5/96	11:00 a.m. CST

The Bidder's Webpage

Due	Principal Amount*	Price	Coupon	Your Yield	Best Yield	Status
March 1, 1998	\$15,285,000			%	%	No Bid Not Leader
March 1, 1999	\$15,890,000	100.000 %	4.400 %	4.400 %	4.400 %	Leader
March 1, 2000	\$15,225,000	99.041 %	4.250 %	4.600 %	4.550 %	Not Leader

The Issuer's Webpage

Due	Principal Amount*	Price	Coupon	Yield	Winner
March 1, 1998	\$15,285,000	101.019 %	5.100 %	4.000 %	Insurance Company
March 1, 1999	\$15,890,000	100.000 %	4.400 %	4.400 %	Mutual Fund
March 1, 2000	\$15,225,000	99.177 %	4.250 %	4.550 %	Underwriter

*For illustrative purposes only.

Bidders who are registered with MuniAuction can select from a variety of auctions, and review the Notice of Sale and Preliminary Official Statement (POS) on-line before entering the auction of choice.

The issuer offers bonds for sale on the MuniAuction website. Qualified institutional investors and underwriters visit the site at the scheduled auction time and submit bids to purchase one or more bond maturities. Throughout the 15 minute auction, they can see the best bid and repeatedly improve their own.

The issuer can watch the auction in progress from their own MuniAuction Webpage. They will see winning bids as they are submitted and winning bidders. MuniAuction even computes the True Interest Cost (TIC) of the winning bids.

Issuer Options

MuniAuction can be used in a variety of ways by issuers and bidders. Choose from the options...

Replace the Fax



MuniAuction can serve simply as a fax replacement—without changing any other aspect of the traditional competitive sale process. It is also a tool to simplify tasks performed by the issuer.

- ✓ Forces bids to conform to issuer's specs
- ✓ Calculates TIC
- ✓ Summarizes auction results
- ✓ E-mails "confirmations" to winning bidders

Allow Multiple Bids



If issuers want to retain the "underwriters only" and "all-or-none" features of traditional competitive sales, they can improve competition with MuniAuction by simply allowing underwriters to see the best bid and raise their own throughout the 15 minute duration of the auction.

- ✓ Increases number of bids
- ✓ Enhances competition among underwriters

Introduce New Kinds of Bidders



MuniAuction's "maturity-by-maturity" bidding option enables smaller, regional underwriters and institutional investors — previously excluded from traditional competitive sales—to bid aggressively for selected maturities.

- ✓ Introduces entirely new types of bidders
- ✓ Minimizes yield for every maturity
- ✓ Reduces gross spread

Remember

The issuer decides which options to use: Replace the Fax, Allow Multiple Bids, Introduce New Kinds of Bidders.

MuniAuction

The First Municipal Bond Auction Website

Contact Information

Call Myles Harrington or Dan Veres at 412-391-7686 for an on-line demonstration.

MuniAuction
Allegheny Building, Suite 1212
429 Forbes Avenue
Pittsburgh, PA 15219

Phone: (412) 391-7686
Fax: (412) 391-7608
Website: MuniAuction.com

```

#!/usr/bin/perl5
# bond.pl
# Bob O'Neill 11/30/96
# Bob Panoff 01/16/97
# Last update: 05/22/97

$$server_name="muniauction.com";
$server_name="storm.shodor.org";
&get_request;

$auction_name=$rqpairs{'auction_name'};
$$templates="/home/dveres/gs-web/$client/templates";
$templates="/var/www/htdocs/ma/templates";
$htdocs="/var/www/htdocs/ma/$auction_name";
$htdocs2="/var/www/htdocs/ma";
$admin_id="JSASTAFYTAFYG";
$observer_id="6666666";
@longmonths = ('January', 'February', 'March', 'April', 'May',
               'June', 'July', 'August', 'September', 'October',
               'November', 'December');
@longdays = ('Sunday', 'Monday', 'Tuesday', 'Wednesday', 'Thursday',
             'Friday', 'Saturday');
@shortmonths = ('Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug',
                 'Sep', 'Oct', 'Nov', 'Dec');
@shortdays = ('Sun', 'Mon', 'Tue', 'Wed', 'Thu', 'Fri', 'Sat');

$id=$rqpairs{'id'};
$corporation=$rqpairs{'corporation'};
$email=$rqpairs{'email'};
$password=$rqpairs{'password'};
$selection=$rqpairs{'selection'};
$documents=$rqpairs{'documents'};
$observe=$rqpairs{'observe'};
$verify=$rqpairs{'verify'};
$view=$rqpairs{'view'};
$new=$rqpairs{'new'};
$addnew=$rqpairs{'addnew'};
$restart=$rqpairs{'restart'};
$restartnow=$rqpairs{'restartnow'};
$createnew=$rqpairs{'createnew'};
$enterbonds=$rqpairs{'enterbonds'};
$createnow=$rqpairs{'createnow'};
$modify_auction=$rqpairs{'modify_auction'};
$modify_bonds=$rqpairs{'modify_bonds'};
$modify_now=$rqpairs{'modify_now'};
$listfirms=$rqpairs{'listfirms'};
$removeOne=$rqpairs{'removeOne'};
$removeNow=$rqpairs{'removeNow'};
$removeYes=$rqpairs{'removeYes'};
$removeAll=$rqpairs{'removeAll'};
$removeAllNow=$rqpairs{'removeAllNow'};
$variable=$rqpairs{'variable'};
$variable2=$rqpairs{'variable2'};
$variable3=$rqpairs{'variable3'};
$toBeRemoved=$rqpairs{'toBeRemoved'};
$whichToGo=$rqpairs{'whichToGo'};
$numfirms=$rqpairs{'numfirms'};

# check for valid auction name

```

65431 U.S. PTO
60/041876
05/29/97



```

if ($auction_name eq "" && $documents !~ /Rules/ && $variable eq "") {
    &html_header("Error", 2);
    print "<p>Sorry. You did not choose an auction name.</p>\n";
    print "Please hit the BACK button to return to the Selections Page.</p>\n";
    &html_trailer;
    exit;
}

# for viewing documentation:
if ($documents =~ /Notice/) {
    print "Location: http://$server_name/ma/$auction_name/nos.html\n\n";
    exit;
}
elsif ($documents =~ /POS/) {
    print "Location: http://$server_name/ma/$auction_name/pos.html\n\n";
    exit;
}
elsif ($documents =~ /Rules/) {
    print "Location: http://$server_name/ma/rules.html\n\n";
    exit;
}

# go to registration page
if ($variable eq "" && $documents eq "") {
    &html_header("Registration", 1);
    print <<EOI;

<form
method="POST"
action="http://storm.shodor.org/cgi-bin/ma/bond.pl">
<input type=hidden name="auction_name" value="$auction_name">
<input type=hidden name=variable value="junk">
<input type=hidden name=variable3 value="junk">
<p>
<table border=0 cellspacing=0 cellpadding=0>
<tr><td><b>Enter ID number:</b><td><input type=password name="id"><br>
<tr><td><b>Enter your password:</b><td>
<input type=password name="password"><br>
</table><p>
<i>For assistance, call (412) 391-7686</i><br>
<p>
<input type=image name=selection value="Enter Auction"
border=0 src="http://$server_name/ma/images/ENTER.GIF">
EOI
    &html_trailer;
    exit;
}

# check for a valid ID
$id =~ tr/a-z/A-Z/; # allow case insensitivity

if ($id ne $admin_id && $id ne $observer_id) {
    open(ID, "$htdocs2/bondid.txt") || die "Couldn't open
        bondid.txt\n";
    $valid="no";
    $who="junk";
    while ($who ne "") {
        chop($who=<ID>);
        if ($who eq $id) {
            chop($corporation=<ID>);
}

```

```

chop($email=<<ID>),
chop($abbreviation=<ID>),
chop($address=<ID>);
$valid="yes";
}
}
close(ID);
if ($id eq "") {
$valid="no";
}
if ($valid eq "no") {
&html_header("Incorrect ID",2);
print "<h2>Incorrect ID</h2> Sorry. You entered an incorrect ID.\n";
print "Please hit the BACK button to return to the Registration Page.\n";
print "<p>For assistance, call (412) 391-7686.<p>\n";
&html_trailer;
exit;
}
}
elsif ($id eq $admin_id) {
$corporation="System Administrator";
}
elsif ($id eq $observer_id) {
$corporation="Issuer";
}

#check for universal password, for now
$password =~ tr/A-Z/a-z/; # allow case insensitivity

unless ($password eq "ma") {
&html_header("Incorrect Password",2);
print "<h2>Incorrect Password</h2>\n";
print "Sorry, you did not enter the correct password.\n";
print "Please hit the BACK button to return to the Registration Page.\n";
print "For assistance, call (412) 391-7686.<p>\n";
&html_trailer;
exit;
}

if ($id eq $observer_id) {

open(AUCTION, "$htdocs/auction.txt") || die
"Couldn't open $htdocs/auction.txt\n";

# read in auction-specific information
chop($auction_startmonth=<AUCTION>);
chop($auction_startday=<AUCTION>);
chop($auction_startyear=<AUCTION>);
chop($auction_starthour=<AUCTION>);
chop($auction_startmin=<AUCTION>);
chop($auction_endhour=<AUCTION>);
chop($auction_endmin=<AUCTION>);
chop($settlement_month=<AUCTION>);
chop($settlement_day=<AUCTION>);
chop($settlement_year=<AUCTION>);
chop($issue_month=<AUCTION>);
chop($issue_day=<AUCTION>);
chop($issue_year=<AUCTION>);
}

```

```

chop($firstPay_month=<AUCTION>);
chop($firstPay_day=<AUCTION>);
chop($firstPay_year=<AUCTION>);
chop($auction_info=<AUCTION>);
chop($numbonds=<AUCTION>);

for ($i=0; $i < $numbonds; $i++) {
    chop($month[$i]=<AUCTION>);
    chop($day[$i]=<AUCTION>);
    chop($year[$i]=<AUCTION>);
    chop($principal[$i]=<AUCTION>);
}
close(AUCTION);

# take commas out of principals
for ($i=0; $i < $numbonds; $i++) {
    $principal[$i] =~ s/[,]///g;
}

# compute total of bond principals
$total=0;
for ($i=0; $i < $numbonds; $i++) {
    $total=$total+$principal[$i];
}
$total=&commas($total);

# put commas back in principals
for ($i=0; $i < $numbonds; $i++) {
    $principal[$i]=&commas($principal[$i]);
}

open (BEST, "$htdocs/bestrates.txt") || die "Couldn't
open bestrates.txt\n";
for ($i=0; $i < $numbonds; $i++) {
    chop($idwin[$i]=<BEST>);
    chop($corporationwin[$i]=<BEST>);
    chop($abbreviationwin[$i]=<BEST>);
    chop($pricewin[$i]=<BEST>);
    chop($interestwin[$i]=<BEST>);
    chop($bestyield[$i]=<BEST>);
}
close(BEST);

&html_header("Observe Auction",1);
print <<EOI;
<input type=hidden name=id value="$id">
<input type=hidden name=corporation value="$corporation">
<input type=hidden name=email value="$email">
<input type=hidden name=password value="$password">
<input type=hidden name=auction_name value="$auction_name">
<input type=hidden name=variable value="junk">
<input type=hidden name=variable2 value="junk">
<center>\$total<sup>*</sup><br>
$auction_info<br></center>
<p>
<input type=submit name="observe" value="Refresh">
<p>
<table border=0 cellspacing=5 cellpadding=5>
<tr><th>Due</th><th>Principal<br>Amount<sup>*</sup></th><th>Price
<th>Coupon<th>Best Yield<th>Winner

```

```

EOI

for ($i=0; $i < $numbonds; $i++) {

print <<EOI;
<tr>
<td align=center>$month[$i] $day[$i], $year[$i]
<td align=center>\$$_principal[$i]
<td align=center>
EOI

if ($pricewin[$i] < 999) {
    printf "%.3f%", $pricewin[$i];
}
else {
    print "No Bid";
}

print <<EOI;
<td align=center>
EOI

if ($interestwin[$i] < 999) {
    printf "%.3f%", $interestwin[$i];
}
else {
    print "No Bid";
}

print <<EOI;
<td align=center>
EOI

if ($bestyield[$i] < .999) {
    printf ("%.3f%", $bestyield[$i]);
}
else {
    print "No Bid";
}

print <<EOI;
<td align=center>
$corporationwin[$i]
EOI
} # end of (for 0<i<$numbonds)

print <<EOI;
</table>
<p>
<input type=hidden name="id" value="$id">
<input type=hidden name="auction_name" value="$auction_name">
<input type=submit name="observe" value="Refresh">
<p>
EOI

&html_trailer;
exit;
}

#(for removing a bidder)

```

```

for ($i=0; $i<($numfirms-1, , $i++) {
    $firm_idName[$i] = "firm_id[$i]";
    $firm_nameName[$i] = "firm_name[$i]";
    $firm_abbrevName[$i] = "firm_abbrev[$i]";
    $firm_addressName[$i] = "firm_address[$i]";
    $firm_id[$i] = $rqpairs{$firm_idName[$i]};
    $firm_name[$i] = $rqpairs{$firm_nameName[$i]};
    $firm_abbrev[$i] = $rqpairs{$firm_abbrevName[$i]};
    $firm_address[$i] = $rqpairs{$firm_addressName[$i]};
}

if ($variable2 eq "" && $documents eq "") {
    if ($id ne $admin_id) {
        &html_header("Verification",1);
    print <>EOI;
    <input type="hidden" name="id" value="$id">
    <input type="hidden" name="corporation" value="$corporation">
    <input type="hidden" name="email" value="$email">
    <input type="hidden" name="password" value="$password">
    <input type="hidden" name="variable" value="junk">
    <input type="hidden" name="variable2" value="junk">
    <input type="hidden" name="auction_name" value="$auction_name">
    <p>
Your ID number is $id.<br>
Your firm is:<br>
<ul>$corporation<br>
$address<p></ul>
<strong>Please verify that the above information is correct</strong><p>
<input type=radio name=info value=yes> YES
<input type=radio name=info value=no> NO<p>
<strong>Have you checked to see if there have been any recent amendments
to the <a href="http://$server_name/ma/$auction_name/nos.html">Notice of
Sale</a>?</strong><p>
<input type=radio name=nos value=yes> YES
<input type=radio name=nos value=no> NO<p>
<strong>Have you received the
<a href="http://$server_name/ma/$auction_name/pos.html">Preliminary Official
Statement</a> for this issue and have you had sufficient time to review
it?</strong><p>
<input type=radio name=pos value=yes> YES
<input type=radio name=pos value=no> NO<p>
<strong>Have you read <a href="http://$server_name/ma/rules.html">Rules
of MuniAuction</a> and do you agree to abide by them?</strong><p>
<input type=radio name=rules value=yes> YES
<input type=radio name=rules value=no> NO<p>
<strong>You must select one of the following bidding methods for this
auction:</strong><p>
<input type=radio name=combo value=bid-pc> Price and Coupon
<input type=radio name=combo value=bid-cy> Coupon and Yield<p>

<input type=submit name=begin value="Enter Auction">
</form>
EOI
    &html_trailer;
    exit;
} # end of if (id ne $admin_id)
else { # if (id eq $admin_id)
    &html_header("Auction Administration",1);
    print <>EOI;
}

```

```

<center><h1>Auction Administration</h1></center>

<input type=hidden name=id value="$id">
<input type=hidden name=password value="$password">
<input type=hidden name=corporation value="$corporation">
<input type=hidden name=email value="$email">
<input type=hidden name=info value="yes">
<input type=hidden name=nos value="yes">
<input type=hidden name=pos value="yes">
<input type=hidden name=rules value="yes">
<input type=hidden name=combo value="bid-pc">
<input type=hidden name=variable value=junk>

<CENTER>
EOI

print <<EOI;
<TABLE BORDER=6 CELLSPACING=5 CELLPADDING=5>
<tr>
<th VALIGN=MIDDLE ALIGN= CENTER>
Auction Management<br>
</th>
<th VALIGN=MIDDLE ALIGN= CENTER>
Bidder Registration</th>
</tr>

<tr>
<td VALIGN=MIDDLE ALIGN= CENTER>
EOI
open (AUCTIONS, "$htdocs2/names.txt") || die "Couldn't open names.txt\n";
$i=1;
$maxNumber=0;
@auctons[0]="junk";
while ($auctons[$i-1] ne "") {
    chop($auctons[$i]=<AUCTIONS>);
    $maxNumber++;
    $i++;
}
close(AUCTIONS);

print "Auction: <select name=auction_name>\n";
for ($i=1; $i <= $maxNumber; $i++) {
    unless ($auctons[$i] eq "") {
        print "<option>$auctons[$i]\n";
    }
}
print "</select>\n";
print <<EOI;
<td VALIGN=MIDDLE ALIGN= CENTER>
<input type=submit name=listfirms value="List Current Registrants"></td>
</tr>

<tr>
<td VALIGN=MIDDLE ALIGN= CENTER>
<input type=submit name=view value="View Current Auction Leaders"></td>
<td VALIGN=MIDDLE ALIGN= CENTER>
<input type=submit name=removeOne value="Remove a Bidder"></td>
</tr>

```

```

<tr>
<td VALIGN=MIDDLE ALIGN= CENTER>
<input type=submit name=restart value="Restart Auction"></td>
<td VALIGN=MIDDLE ALIGN= CENTER>
<input type=submit name=removeAll value="Remove All Bidders"></td>
</tr>

<tr>
<td VALIGN=MIDDLE ALIGN= CENTER>
<input type=submit name=modify_auction value="Modify an Existing Auction">
</td>
<td VALIGN=MIDDLE ALIGN= CENTER>
<input type=submit name=new value="Add a New Bidder"></td>
</tr>

</table><P>

<input type=submit name=createnew value="Create New Auction"></td>
</CENTER>
</form>
EOI
&html_trailer;
exit;
} # end of if ($variable eq "")

# get variables from input
$info=$rqpairs{'info'};
$nos=$rqpairs{'nos'};
$pos=$rqpairs{'pos'};
$rules=$rqpairs{'rules'};
$combo=$rqpairs{'combo'};

if ($addnew ne "") {
$new_id=$rqpairs{'newid'};
$new_corp=$rqpairs{'newcorp'};
$new_emailp=$rqpairs{'newemail'};
$new_abbr=$rqpairs{'newabbr'};
$new_address=$rqpairs{'newaddress'};
}

$newauction_startmonth=$rqpairs{'newauction_startmonth'};
$newauction_startday=$rqpairs{'newauction_startday'};
$newauction_startyear=$rqpairs{'newauction_startyear'};
$newauction_starthour=$rqpairs{'newauction_starthour'};
$newauction_startmin=$rqpairs{'newauction_startmin'};
$newauction_endhour=$rqpairs{'newauction_endhour'};
$newauction_endmin=$rqpairs{'newauction_endmin'};
$settlement_month=$rqpairs{'settlement_month'};
$settlement_day=$rqpairs{'settlement_day'};
$settlement_year=$rqpairs{'settlement_year'};
$issue_month=$rqpairs{'issue_month'};
$issue_day=$rqpairs{'issue_day'};
$issue_year=$rqpairs{'issue_year'};
$firstPay_month=$rqpairs{'firstPay_month'};
$firstPay_day=$rqpairs{'firstPay_day'};
$firstPay_year=$rqpairs{'firstPay_year'};
$newauction_name=$rqpairs{'newauction_name'};
$newauction_info=$rqpairs{'newauction_info'};

```

```

$newauction_numbonds=$rqpairs{'newauction_numbonds'};
$newauction_month=$rqpairs{'newauction_month'};
$newauction_day=$rqpairs{'newauction_day'};
$newauction_year=$rqpairs{'newauction_year'};
$newauction_price=$rqpairs{'newauction_price'};

# obtain auction data from a datafile
if ($documents eq "" && $createnew eq "" && $enterbonds eq "" &&
$createnow eq "" && $modify_auction eq "" && $modify_bonds eq "" &&
$modify_now eq "") {
    open(AUCTION, "$htdocs/auction.txt") || die "Couldn't open
$htdocs/auction.txt\n";

    # read in auction-specific information
    chop($auction_startmonth=<AUCTION>);
    chop($auction_startday=<AUCTION>);
    chop($auction_startyear=<AUCTION>);
    chop($auction_starthour=<AUCTION>);
    chop($auction_startmin=<AUCTION>);
    chop($auction_endhour=<AUCTION>);
    chop($auction_endmin=<AUCTION>);
    chop($settlement_month=<AUCTION>);
    chop($settlement_day=<AUCTION>);
    chop($settlement_year=<AUCTION>);
    chop($issue_month=<AUCTION>);
    chop($issue_day=<AUCTION>);
    chop($issue_year=<AUCTION>);
    chop($firstPay_month=<AUCTION>);
    chop($firstPay_day=<AUCTION>);
    chop($firstPay_year=<AUCTION>);
    chop($auction_info=<AUCTION>);
    chop($numbonds=<AUCTION>);

    for ($i=0; $i < $numbonds; $i++) {
        chop($month[$i]=<AUCTION>);
        chop($day[$i]=<AUCTION>);
        chop($year[$i]=<AUCTION>);
        chop($principal[$i]=<AUCTION>);
    }

    close(AUCTION);

    for ($i=0; $i < $numbonds; $i++) {
        $pricename[$i] = "price$i";
        $interestname[$i] = "interest$i";
        $yieldname[$i] = "yield$i";
    }

    for ($i=0; $i < $numbonds; $i++) {
        $price[$i] = $rqpairs{$pricename[$i]};
        $interest[$i] = $rqpairs{$interestname[$i]};
        $yield[$i] = $rqpairs{$yieldname[$i]};
    }
}

$submit_bid=$rqpairs{'submit_bid'};
$calculate=$rqpairs{'calculate'};

```

```

$begin=$rqpairs{'begin'};

# take out any stray %
for ($i=0; $i < $numbonds; $i++) {
    $price[$i] =~ s/^\%//g;
    $interest[$i] =~ s/^\%//g;
    $yield[$i] =~ s/^\%//g;
}

# check for participation agreements
if ($info ne "yes") {
    &html_header("Error",2);
    print "<p>You cannot enter the auction at this time. For assistance,\n";
    print "call (412) 391-7686, or email the Administrator by clicking on\n";
    print "the link at the bottom of the page.<p>\n";
    &html_trailer;
    exit;
}

if ($nos ne "yes" || $pos ne "yes" || $rules ne "yes" || $combo eq "") {
    &html_header("Error",2);
    print "<p>Sorry, you cannot enter the auction until the following";
    print " conditions are met:<p>\n";
    if ($nos ne "yes") {
        print "<li> You have checked to see if there have been any recent";
        print " amendments to the Notice of Sale</li><p>\n";
    }
    if ($pos ne "yes") {
        print "<li> You have received the Preliminary Official Statement for";
        print " this issue and have had time to review it</li><p>\n";
    }
    if ($rules ne "yes") {
        print "<li> You have read Rules of MuniAuction";
        print " and agree to abide by them</li><p>\n";
    }
    if ($combo eq "") {
        print "<li> You select a bidding of method of either Price and Coupon\n";
        print "or Coupon and Yield</li><p>\n";
    }
    print "Please hit the BACK button to return to the Verification Page.<p>\n";
    &html_trailer;
    exit;
}

if ($combo eq 'bid-pc'){
    for ($i=0; $i < $numbonds; $i++) {
        if (($interest[$i] eq "" && $price[$i]) || ($price[$i] eq "" && $interest[$i]))
            &html_header("Invalid Bid",2);
        print "<p>Sorry. At least one of your bids is invalid. For instance,
        for the bond maturing on $month[$i] $day[$i], $year[$i] you have either
        entered a price with no coupon, or a coupon with no price.<p> Please hit
        the BACK button to return to the Auction Page.<p>\n";
        &html_trailer;
        exit;
    }
}

for ($i=0; $i < $numbonds; $i++) {
    $testinterest[$i]=1000*$interest[$i];
}

```

```

if ($testinterest[$i] % 125 != 0 && $testinterest[$i] % 50 != 0) {
    &html_header("Invalid Coupon",2);
    print "<p>Sorry, Your coupon entry does not conform to the rules of the\n";
    print "auction.<br> Coupon entered must be a whole multiple of 1/20th\n";
    print "or 1/8th of 1%.<p> Your bid of $interest[$i] for the maturity
date of $month[$i] $day[$i], $year[$i] is in violation of this rule.<p>\n";
    print "Please hit the BACK button to return to the Auction Page.<p>\n";
    &html_trailer;
    exit;
}
}

for ($i=0; $i < $numbonds; $i++) {
    if ($interest[$i] eq "") {
        $price[$i]=999;
        $interest[$i]=999;
        $yield[$i]=999;
    }
    if ($price[$i] < 98.0) {
        &html_header("Invalid Price",2);
        print "<p>Sorry. At least one of your bids was less than 98.0% of the\n";
        print "corresponding principal.<p>\n";
        print "Please hit the BACK button to return to the Auction Page.<p>\n";
        &html_trailer;
        exit;
    }
}
}#end of bid-pc

if ($combo eq 'bid-cy'){
for ($i=0; $i < $numbonds; $i++) {
    if ((($interest[$i] eq "") && $yield[$i]) || ($yield[$i] eq "" &&
$interest[$i])) {
        &html_header("Invalid Bid",2);
        print "<p>Sorry. At least one of your bids is invalid. For instance, for
the bond maturing on $month[$i] $day[$i], $year[$i] you have either entered
a yield with no coupon, or a coupon with no yield.<p> Please hit the BACK
button to return to the Auction Page.<p>\n";
        &html_trailer;
        exit;
    }
}

for ($i=0; $i < $numbonds; $i++) {
    $testinterest[$i]=1000*$interest[$i];
    if ($testinterest[$i] % 125 != 0 && $testinterest[$i] % 50 != 0) {
        &html_header("Invalid Coupon",2);
        print "<p>Sorry, Your coupon entry does not conform to the rules of the\n";
        print "auction.<br> Coupon entered must be a whole multiple of 1/20th\n";
        print "or 1/8th of 1%.<p> Your bid of $interest[$i] for the maturity date
of $month[$i] $day[$i], $year[$i] is in violation of this rule.<p>\n";
        print "Please hit the BACK button to return to the Auction Page.<p>\n";
        &html_trailer;
        exit;
    }
}

for ($i=0; $i < $numbonds; $i++) {
    if ($interest[$i] eq "") {

```

```

$price[$i]=999;
$interest[$i]=999;
$yield[$i]=999;
}
}

#endif of bid-cy

# take commas out of principals
for ($i=0; $i < $numbonds; $i++) {
    $principal[$i] =~ s/\,\//g;
}

# compute total of bond principals
$total=0;
for ($i=0; $i < $numbonds; $i++) {
    $total=$total+$principal[$i];
}
$total=&commas($total);

# unless we're just beginning,
unless ($begin ne "") {

    for ($i=0; $i < $numbonds; $i++) {

        # calculate the days from beginning of interest period to settlement date

        for ($imon=0; $imon < 12; $imon++) {
            if ($issue_month eq $longmonths[$imon]) {
                $m1=$imon+1;
            }
        }

        for ($imon=0; $imon < 12; $imon++) {
            if ($settlement_month eq $longmonths[$imon]) {
                $m2=$imon+1;
            }
        }

        for ($imon=0; $imon < 12; $imon++) {
            if ($month[$i] eq $longmonths[$imon]) {
                $m3=$imon+1;
            }
        }

        $d1=$issue_day;
        $d2=$settlement_day;
        if ($d2 == 31 && ($d1 == 30 || $d1 == 31)) {
            $d2=30;
        }
        if ($d1 == 31) {
            $d1=30;
        }
        $d3=$day[$i];
        if ($d3 == 31 && ($d1 == 30 || $d1 == 31)) {
            $d3=30;
        }
        $y1=$issue_year;
        $y2=$settlement_year;
    }
}

```

```

$y3=$year[$i];
$a=($y2-$y1)*360 + ($m2-$m1)*30 + ($d2-$d1);
$b=360.;
$e=180.;
$rv=100.;

# calculate number of coupons to maturity

$n_days=($y3-$y1)*360 + ($m3-$m1)*30 + ($d3-$d1);
$n=int($n_days/180.);
$r=$interest[$i]/100.;

# compute yield or price, depending on situation

if ($interest[$i] < 999) {

if ($combo eq 'bid-pc'){

# initialize yield, check to see price not unreasonable

$p=$price[$i];
$y=.005;
$accint=100.*$a*$r/$b;
$sum=0;

for ($k=1; $k < $n+1; $k++) {
    $sum=$sum+(100*$r/2)/((1+($y/2))**($k-1+((($e-$a)/$e)));
}
$sum=$sum+$rv/((1+($y/2))**($n-1+((($e-$a)/$e)));
$sum=$sum-$accint;

if ($p > $sum) {
    &html_header("Invalid Price",2);
    printf "<p>Sorry. Your bid price of %.3f exceeds the maximum price\n", $p;
    print "for the coupon you entered. <p> Please hit the<br>";
    print "BACK button to return to the Auction Page.<p>\n";
    &html_trailer;
    exit;
}

# now iterate to find y such that sum=p

while (($p-$sum < 0 && $p-$sum < -.000001) || ($p-$sum > 0 &&
$p-$sum > .000001) ) {

    $y=$y*$sum/$p;

    $sum=0;

    for ($k=1; $k < $n+1; $k++) {
        $sum=$sum+(100*$r/2)/((1+($y/2))**($k-1+((($e-$a)/$e)));
    }
    $sum=$sum+$rv/((1+($y/2))**($n-1+((($e-$a)/$e)));
    $sum=$sum-$accint;
}#end while

$yield[$i]=&round(100*$y);

} #end bid-pc

```

```

if ($combo eq 'bid-cy'){

# initialize yield

$y=$yield[$i]/100.;
$accint=100.*$a*$r/$b;
$sum=0;

for ($k=1; $k < $n+1; $k++) {
    $sum=$sum+(100.*$r/2.)/((1.+($y/2.))**($k-1.+((($e-$a)/$e)));
}
$sum=$sum + $rv / ( (1. + ($y/2.) )**($n-1.+((($e-$a)/$e) ) ) );
$price[$i]=int(1000.*($sum-$accint))/1000.;

} #end bid-cy

} #end of interest < 999 loop

} #end numbonds loop

# read in the best yield
open (BEST, "$htdocs/bestrates.txt") || die "Couldn't
open bestrates.txt\n";
for ($i=0; $i < $numbonds; $i++) {
    chop($idwin[$i]=<BEST>);
    chop($corporationwin[$i]=<BEST>);
    chop($abbreviationwin[$i]=<BEST>);
    chop($pricewin[$i]=<BEST>);
    chop($interestwin[$i]=<BEST>);
    chop($bestyield[$i]=<BEST>);
}
close(BEST);

# skip comparison if calculate is set

if (!$calculate){

# don't allow higher yields than already bid

if ($id ne $admin_id) {

open (CHECKBIDS, "$htdocs/$id.txt") || die "Couldn't
open $id.txt the first time.\n";

for ($i=0; $i < $numbonds; $i++) {
    chop($junk1=<CHECKBIDS>);
    chop($junk2=<CHECKBIDS>);
    chop($last_yield[$i]=<CHECKBIDS>);
    if ($last_yield[$i] == 0) {
        $last_yield[$i]="9999";
    }

    if ($last_yield[$i] < $yield[$i]) {
        &html_header("Invalid Bid",2);
        print "<p>Sorry. You are trying to submit a worse bid than one\n";
        print "you have already submitted.<p> Please hit the\n";
        print "BACK button to return to the Auction Page.<p>\n";
        &html_trailer;
        exit;
    }
}
}
}

```

```

        }
    }
close(CHECKBIDS);

} # end if ($id ne $admin_id)

# see if the yield rates are the lowest

for ($i=0; $i < $numbonds; $i++) {

if ($interest[$i] < 999) {

    if ($yield[$i] < $bestyield[$i]) {
        $bestyield[$i]=$yield[$i];
        $idwin[$i]=$id;
        $corporationwin[$i]=$corporation;
        $abbreviationwin[$i]=$abbreviation;
        $pricewin[$i]=$price[$i];
        $interestwin[$i]=$interest[$i];
    }
    if ($id eq $idwin[$i] && $yield[$i] eq $bestyield[$i]) {
        $pricewin[$i]=$price[$i];
        $interestwin[$i]=$interest[$i];
    }
}
}

# see if bestrates.txt is in use
$temp="LOCKED";
while ($temp eq "LOCKED") {
open (RATELOCK, ">$htdocs/bestrateslock.txt") || die
"Couldn't open bestrateslock.txt\n";
chop($temp=<RATELOCK>);
close(RATELOCK);
}

# if not, lock it
open (RATELOCK, ">$htdocs/bestrateslock.txt") || die
"Couldn't open bestrateslock.txt the second time\n";
print RATELOCK "LOCKED\n";
close(RATELOCK);

# write out the new best rates (unless on admin pages)
unless ($id eq $admin_id) {
    open (BEST, ">$htdocs/bestrates.txt") || die "Couldn't
    open bestrates.txt the second time\n";
    for ($i=0; $i < $numbonds; $i++) {
        print BEST "$idwin[$i]\n";
        print BEST "$corporationwin[$i]\n";
        print BEST "$abbreviationwin[$i]\n";
        printf BEST "%.5f\n", $pricewin[$i];
        printf BEST "%.5f\n", $interestwin[$i];
        printf BEST "%.5f\n", $bestyield[$i];
    }
    close(BEST);
}

# unlock bestrates.txt
open (RATELOCK, ">$htdocs/bestrateslock.txt") || die

```

```

"Couldn't open bestrateslock.txt the third time.\n";
print RATELOCK "UNLOCKED\n";
close(RATELOCK);

# put commas in bond principals
for ($i=0; $i < $numbonds; $i++) {
    $principal[$i]=&commas($principal[$i]);
}

# see if bidlog.txt is in use
$tmp="LOCKED";
while($tmp eq "LOCKED") {
    open (BIDLOCK, ">$htdocs/bidloglock.txt") || die
    "Couldn't open bidloglock.txt\n";
    chop($tmp=<BIDLOCK>);
    close(BIDLOCK);
}

# if not, lock it
open (BIDLOCK, ">$htdocs/bidloglock.txt") || die
"Couldn't open bidloglock.txt the second time.\n";
print BIDLOCK "LOCKED\n";
close(BIDLOCK);

# write out the bids to a file
open (BIDS, ">>$htdocs/bidlog.txt") || die
"Couldn't open bidlog.txt\n";

for ($i=0; $i < $numbonds; $i++) {
    if ($interest[$i] > 998) {
        $price[$i]="NO BID";
        $interest[$i]="NO BID";
        $yield[$i]="NO BID";
    }
}

unless ($interest[0] eq "NO BID" && $interest[1] eq "NO BID" && $interest[2]
eq "NO BID" && $interest[3] eq "NO BID" && $interest[4] eq "NO BID" &&
$interest[5] eq "NO BID" && $interest[6] eq "NO BID" && $interest[7] eq
"NO BID" && $interest[8] eq "NO BID" && $interest[9] eq "NO BID") {

    print BIDS "$id ($corporation):\n";

    for ($i=0; $i < $numbonds; $i++) {
        if ($price[$i] =~ /NO/) {
            print BIDS "$price[$i]\t$interest[$i]\t$yield[$i]\n";
        }
        else {
            printf BIDS "%.3f\t", $price[$i];
            printf BIDS "%.3f\t", $interest[$i];
            printf BIDS "%.3f\n", $yield[$i];
        }
    }
    print BIDS "\n";
}
close(BIDS);

# mail confirmation to bidder and Administrator
if ($calculate eq "") {

```

```

$mailprog = '/usr/lib/sendmail';
$date = `/bin/date +%D`;

$address = $ENV{"REMOTE_ADDR"};
$referer = $ENV{"HTTP_REFERER"};
$host = $ENV{"REMOTE_HOST"};

# Open The Mail to Bidder
open(MAIL, "|$mailprog -t") || die "Can't open $mailprog!\n";
print MAIL "To: $email\n";
print MAIL "From: Administrator@MuniAuction.com\n";
print MAIL "Reply-To: Administrator@MuniAuction.com\n";
print MAIL "CC: Administrator@MuniAuction.com\n";
print MAIL "Subject: Bid Confirmation\n\n";
print MAIL "-----\n";
print MAIL "This email confirms that you submitted the following bid\n";
print MAIL " at $referer on $date from $host ($address)\n";
print MAIL "Submitter: $corporation ($id)\n";
print MAIL "Auction: $auction_name\n\n";
print MAIL "Price\tCoupon\tYield\n";

for ($i=0; $i < $numbonds; $i++) {
    if ($price[$i] =~ /NO/) {
        print MAIL "$price[$i]\t$interest[$i]\t$yield[$i]\n";
    }
    else {
        printf MAIL "Issue $i: %.3f\t", $price[$i];
        printf MAIL "%.3f\t", $interest[$i];
        printf MAIL "%.3f\n", $yield[$i];
    }
    print MAIL "\n";
    close(MAIL);
}

}

# now change NO BIDS back to blank
for ($i=0; $i < $numbonds; $i++) {
    if ($interest[$i] =~ /NO BID/) {
        $price[$i]="";
        $interest[$i]="";
        $yield[$i]="";
    }
}

# write out last-submitted values
if (!$calculate && $id ne $admin_id) {
    open (LAST, ">$htdocs/$id.txt") || die "Couldn't open
$id.txt the second time\n";
    for ($i=0; $i < $numbonds; $i++) {
        printf LAST "%.3f\n", $price[$i];
        printf LAST "%.3f\n", $interest[$i];
        printf LAST "%.3f\n", $yield[$i];
    }
}

} # end of "unless we're just beginning"
else { # if we ARE just beginning
    # read in the best yield
}

```

```

open (BEST, "$htdocs/best_ates.txt") || die "Couldn't
open bestrates.txt\n";
for ($i=0; $i < $numbonds; $i++) {
    chop($idwin[$i]=<BEST>);
    chop($corporationwin[$i]=<BEST>);
    chop($abbreviationwin[$i]=<BEST>);
    chop($pricewin[$i]=<BEST>);
    chop($interestwin[$i]=<BEST>);
    chop($bestyield[$i]=<BEST>);
}
close(BEST);

# read in last-submitted values for $id
if ($id ne $admin_id) {
open (LAST, "$htdocs/$id.txt") || die "Couldn't open
$id.txt the third time\n";
for ($i=0; $i < $numbonds; $i++) {
    chop($price[$i]=<LAST>);
    chop($interest[$i]=<LAST>);
    chop($yield[$i]=<LAST>);
}
for ($i=0; $i < $numbonds; $i++) {
    $principal[$i]=&commas($principal[$i]);
}
} # end of if (just beginning)

# print out the new form
if ($id ne $admin_id) {

&html_header("PROPOSAL TO PURCHASE",1);
print <<EOI;
<center>\$total<sup>*</sup><br>
$auction_info<br></center>
<input type="hidden" name="auction_name" value="$auction_name">
<input type="hidden" name="info" value="yes">
<input type="hidden" name="nos" value="yes">
<input type="hidden" name="pos" value="yes">
<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="$combo">
<input type="hidden" name="corporation" value="$corporation">
<input type="hidden" name="email" value="$email">
<input type="hidden" name="id" value="$id">
<input type="hidden" name="password" value="$password">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
<p>Name of firm submitting bid: <b>$corporation</b><p>

<input type=submit name="calculate" value="Calculate / Refresh">
&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;
&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;
&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;
&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;
<input type=button name="submit_bid" value="Submit Bids">
<br>

<p>
<table border=0 cellspacing=5 cellpadding=5>
EOI

```

```

if ($combo eq 'bid-pc'){
print <<EOI;
<tr><th>Due<th>Principal<br>Amount<sup>*</sup><th>Price
<th>Coupon<th>Your<br>Yield<th>Best<br>Yield<th>Your<br>Status
EOI
}

if ($combo eq 'bid-cy'){
print <<EOI;
<tr><th>Due<th>Principal<br>Amount<sup>*</sup><th>Your<br>Price
<th>Coupon<th>Yield<th>Best<br>Yield<th>Your<br>Status
EOI
}

for ($i=0; $i < $numbonds; $i++) {

if ($combo eq 'bid-pc'){

print <<EOI;
<tr>
<td align=center>$month[$i] $day[$i], $year[$i]</td>
<td align=center>\$$_principal[$i]</td>
<td align=center><input name="price$i"
EOI

if ($price[$i] != ""){
printf ("value=\"% .3f\" ", $price[$i]) ;
}

print <<EOI;
size=7 maxlength=11>\%</td>
<td align=center><input name="interest$i"
EOI

if ($interest[$i] != ""){
printf ("value=\"% .3f\" ", $interest[$i]) ;
}

print <<EOI;
size=5 maxlength=5>\%</td>
<td align=center>
EOI

if ($yield[$i] != ""){
printf ("% .3f%", $yield[$i]) ;
}
}#end if bid-pc

if ($combo eq 'bid-cy'){

print <<EOI;
<tr>
<td align=center>$month[$i] $day[$i], $year[$i]</td>
<td align=center>\$$_principal[$i]</td>
<td align=center>
EOI

if ($price[$i] != ""){
printf ("% .3f", $price[$i]) ;
}
}
}

```

```

}

print <<EOI;
</td>
<td align=center><input name="interest$i"
EOI

if ($interest[$i] != ""){
printf ("value=\"% .3f\" ", $interest[$i]) ;
}

print <<EOI;
size=5 maxlength=5>\%</td>
<td align=center><input name="yield$i"
EOI

if ($yield[$i] != ""){
printf ("value=\"% .3f\" ", $yield[$i]) ;
}

print <<EOI;
size=5 maxlength=5>\%
EOI

}#end if bid-cy

print <<EOI;
</td>
<td align=center>
EOI

if ($bestyield[$i] < 999){
    printf ("% .3f%", $bestyield[$i]);
}
else {
    print "No Bid";
}

print <<EOI;
</td>
<td align=center>
EOI
if ($idwin[$i] eq $id) {
    print "Leader\n";
}
else {
    print "Not Leader\n";
}
print <<EOI;
</td>
</tr>
EOI
} # end of for (0<=i<$numbonds)
} # end of if (not administrator)

else { # (if administrator)
    if ($view ne "") {
        &html_header("AUCTION ADMINISTRATION",0);
        print <<EOI;
        <center>\$ $total<sup>*</sup><br>

```

```

$auction_info<br></center>
<table border=0 cellspacing=5 cellpadding=5>
<tr><th>Due</th><th>Principal<br>Amount<sup>*</sup></th><th>Price
<th>Coupon</th><th>Best Yield</th><th>Winner</th><th>Winner's<br>ID
EOI

for ($i=0; $i < $numbonds; $i++) {
    print <<EOI;
    <tr>
    <td align=center>$month[$i] $day[$i], $year[$i]</td>
    <td align=center>\$principal[$i]</td>
    <td align=center>
EOI

    if ($pricewin[$i] < 999) {
        printf "%.3f%", $pricewin[$i];
    }
    else {
        print "No Bid";
    }

    print <<EOI;
    </td>
    <td align=center>
EOI

    if ($interestwin[$i] < 999) {
        printf "%.3f%", $interestwin[$i];
    }
    else {
        print "No Bid";
    }

    print <<EOI;
    </td>
    <td align=center>
EOI

    if ($bestyield[$i] < 999) {
        printf ("%.3f%", $bestyield[$i]);
    }
    else {
        print "No Bid";
    }

    print <<EOI;
    <td align=center>
$abbreviationwin[$i]
</td>
    <td align=center>
EOI
        print "$idwin[$i]\n";
    print <<EOI;
    </td>
    </tr>
EOI

} # end of (for 0<i<$numbonds)
} # end of (if $view ne "")
```

```

} # end of (if administrator)

if ($view ne "" || $id ne $admin_id) {
print <<EOI;
</table>
EOI

unless ($id eq $admin_id) {
print <<EOI;
<p>
<input type=submit name="calculate" value="Calculate / Refresh">
&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;
&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;
&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;
&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;
&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;&nbsp;
<input type=button name="submit_bid" value="Submit Bids">
<p><sup>*</sup>Preliminary, subject to change
<p><hr>
<table border=0 cellspacing=0 cellpadding=0>
<tr><td>Go to: <td><a href="http://$server_name/ma/$auction_name/nos.html">
Notice Of Sale</a>,
<a href="http://$server_name/ma/$auction_name/pos.html">Preliminary
Official Statement</a>,
<a href="http://$server_name/ma/rules.html">Rules of MuniAuction</a>
EOI
}
else {
print <<EOI;
<p><hr>
<table border=0 cellspacing=0 cellpadding=0>
<tr><td>Go to: <td><a href="http://$server_name/ma/$auction_name/nos.html">
Notice Of Sale</a>,
<a href="http://$server_name/ma/$auction_name/pos.html">Preliminary Official
Statement</a>,
<a href="http://$server_name/ma/rules.html">Rules of MuniAuction</a>,
<a href="http://$server_name/ma/index2.html">MuniAuction Homepage</a>
EOI
}
}

} # end of (if $view ne "")

# unlock bidlog.txt
open (BIDLOCK, ">$htdocs/bidloglock.txt") || die
"Couldn't open bidloglock.txt the third time\n";
print BIDLOCK "UNLOCKED\n";
close (BIDLOCK);

# administrative option: add a bidder
if ($new ne "") {
&html_header("AUCTION ADMINISTRATION",1);
print <<EOI;
<input type="hidden" name="auction_name" value="$auction_name">
<input type="hidden" name="info" value="yes">
<input type="hidden" name="nos" value="yes">
<input type="hidden" name="pos" value="yes">
<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="$combo">
<input type="hidden" name="corporation" value="$corporation">

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<input type="hidden" name="id" value="$id">
<input type="hidden" name="password" value="$password">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
<h1>Add a New Bidder</h1>
<table border=0 cellspacing=0 cellpadding=0>
<tr><td><strong>ID No.</strong> <td><input name="newid"><br>
<tr><td><strong>Corporation:</strong> <td><input name="newcorp"><br>
<tr><td><strong>Email:</strong> <td><input name="newemail"><br>
<tr><td><strong>Abbreviation:</strong> <td><input name="newabbr"><br>
<tr><td><strong>Address:</strong> <td><input name="newaddress"><br>
</table>
<input type=submit name=addnew value="Add New Bidder">
<input type=reset value="Reset Form">
</form>
EOI
}

# administrative option: add new bidder

if ($addnew ne "") {
    if ($new_id eq "bestrates" || $new_id eq "bondid" || $new_id eq "bidloglock"
    || $new_id eq "bidlog" || $new_id eq "bestrateslock" || $new_id eq
    "startrates" || $new_id eq "startbid" || $new_id eq "bondprincipal" ||
    $new_id eq "bondreadme" || $new_id eq "bondsav" || $new_id eq "yo" ||
    $new_id eq "bidlog") {
        &html_header("Invalid ID",2);
        print "<p>Sorry, you entered an invalid ID.<p>\n";
        print "Please hit the BACK button and choose a valid ID number\n";
        print "for this firm.<p>\n";
        &html_trailer;
        exit;
    }
}

# take out spaces in new ID
$new_id =~ s/ /g;

if ($addnew ne "" && ($new_id eq "" || $new_corp eq "" || $new_email eq ""
|| $new_abbr eq "" || $new_address eq "")) {
    &html_header("Invalid Entry",2);
    print "<p>At least one of the input regions for the new bidder is blank.<p>\n";
    print "Please hit the BACK button and fill in all regions.<p>\n";
    &html_trailer;
    exit;
}

if ($addnew ne "" && $new_id eq "") {
    &html_header("Invalid ID",2);
    print "<p>Sorry, null ID numbers are not allowed.<p>\n";
    print "Please hit the BACK button and choose a valid ID number\n";
    print "for this firm.\n";
    &html_trailer;
    exit;
}

if ($addnew ne "") {
    open (IDCHECK, "$htdocs2/bondid.txt") || die "Couldn't
    open bondid.txt to look at ID numbers\n";
    $idcheck="junk";
}

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```

while ($idcheck ne "") {
    chop($idcheck=<IDCHECK>);
    chop($junk0=<IDCHECK>);
    chop($junk1=<IDCHECK>);
    chop($junk2=<IDCHECK>);
    chop($junk3=<IDCHECK>);
    if ($idcheck eq "$new_id") {
        &html_header("Invalid ID",2);
        print "<p>Sorry, that ID number is already taken.</p>\n";
        print "Please hit the BACK button and\n";
        print "choose a different ID number for this firm.\n";
        &html_trailer;
        exit;
    }
}
close (IDCHECK);

open (ADDNEW, ">>$htdocs2/bondid.txt") || die
"Couldn't open bondid.txt to add a new id\n";
print ADDNEW "$new_id\n$new_email\n$new_corp\n$new_email\n$new_abbr\n";
print ADDNEW "$new_address\n";
close (ADDNEW);

open (AUCTIONS, "$htdocs2/names.txt") || die "Couldn't open names.txt\n";
$i=1;
$maxNumber=0;
$auctions[0]="junk";
while ($auctions[$i-1] ne "") {
    chop($auctions[$i]=<AUCTIONS>);
    $maxNumber++;
    $i++;
}
close (AUCTIONS);

for ($i=1; $i<$maxNumber; $i++) {
    open (NEWFILE, ">>$htdocs2/$auctions[$i]/$new_id.txt") || die
    "Couldn't create the file $auctions[$i]/$new_id.txt\n";
    close (NEWFILE);
}
&html_header("AUCTION ADMINISTRATION",0);
print "<center><h1>New Bidder Successfully Added</h1></center>\n";
}

# administrative option: restart auction
if ($restart ne "") {
    &html_header("AUCTION ADMINISTRATION",1);
    print <<EOI;
<input type="hidden" name="auction_name" value="$auction_name">
<input type="hidden" name="info" value="yes">
<input type="hidden" name="nos" value="yes">
<input type="hidden" name="pos" value="yes">
<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="$combo">
<input type="hidden" name="corporation" value="$corporation">
<input type="hidden" name="id" value="$id">
<input type="hidden" name="password" value="$password">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
EOI
    print "<h2>Are you sure you want to restart Auction $auction_name?</h2>\n";
}

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```

    print <<EOI;
<p>
<input type=submit name=restartnow value="Restart Auction Now">
<p>
</form>
EOI
}

# administrative option: restart now
if ($restartnow ne "") {
    open (FILENAMES, "$htdocs2/bondid.txt") || die "Couldn't
        open bondid.txt to look at ID numbers the second time\n";
    $filename="junk";
    while ($filename ne "") {
        chop($filename=<FILENAMES>);
        chop($junk0=<FILENAMES>);
        chop($junk1=<FILENAMES>);
        chop($junk2=<FILENAMES>);
        chop($junk3=<FILENAMES>);
        unless ($filename eq "") {
            open (NEWBIDS, ">$htdocs2/$auction_name/$filename.txt") || die "Couldn't
                restart $filename.txt\n";
                for ($i=0; $i<$numbonds; $i++) {
                    print NEWBIDS "0\n0\n0\n0\n";
                }
            close (NEWBIDS);
        }
    }
    close(FILENAMES);

    open (NEWRATES, ">$htdocs2/$auction_name/bestrates.txt") || die "Couldn't
        restart bestrates.txt\n";
        for ($i=0; $i<$numbonds; $i++) {
            print NEWRATES "\n\n\n999.99900\n999.99900\n999.99900\n";
        }
    close(NEWRATES);
    &html_header("AUCTION ADMINISTRATION",0);
    print "<center><h1>Auction $auction_name Successfully Restarted</h1>";
    print "</center>\n";
}

# administrative option: create a new auction
if ($createnew ne "") {

    &html_header("AUCTION ADMINISTRATION",1);
    print <<EOI;
<input type="hidden" name="auction_name" value="$auction_name">
<input type="hidden" name="info" value="yes">
<input type="hidden" name="nos" value="yes">
<input type="hidden" name="pos" value="yes">
<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="$combo">
<input type="hidden" name="corporation" value="$corporation">
<input type="hidden" name="id" value="$id">
<input type="hidden" name="password" value="$password">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
    <h2><center>Create a New Auction</center></h2>

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<strong>Date of Auction:</strong><br>
Month:
<select name="newauction_startmonth">
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
<option>December
</select>
Day:
<input name="newauction_startday" size=2 maxlength=2>
Year:
<input name="newauction_startyear" size=4 maxlength=4><br>
Start time:
<input name="newauction_starthour" size=2 maxlength=2>:
<input name="newauction_startmin" size=2 maxlength=2>
End time:
<input name="newauction_endhour" size=2 maxlength=2>:
<input name="newauction_endmin" size=2 maxlength=2>
<p>
<strong>Settlement date:</strong><br>
Month:
<select name="settlement_month">
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
<option>December
</select>
Day:
<input name="settlement_day" size=2 maxlength=2>
Year:
<input name="settlement_year" size=4 maxlength=4><p>

<strong>Dated (issue) date:</strong><br>
Month:
<select name="issue_month">
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
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<option>October
<option>November
<option>December
</select>

Day:
<input name="issue_day" size=2 maxlength=2>
Year:
<input name="issue_year" size=4 maxlength=4><p>

<strong>Date of first interest payment:</strong><br>
Month:
<select name="firstPay_month">
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
<option>December
</select>

Day:
<input name="firstPay_day" size=2 maxlength=2>
Year:
<input name="firstPay_year" size=4 maxlength=4><p>



```

```

$good_name =~ s/\/<//g;
$good_name =~ s/\/>//g;
$good_name =~ s/\/?//g;

#check for unique auction name
open (NAMES, "$htdocs2/names.txt") || die "Couldn't open
| names.txt\n";
$which="junk";
$uniquename="yes";
while ($which ne "") {
    chop ($which=<NAMES>);
    if ($which eq $newauction_name) {
        $uniquename="no";
    }
}
close (NAMES);
if ($uniquename eq "no" || $good_name ne $newauction_name) {
    &html_header("Invalid Auction Name", 2);
    print "<p>Sorry, that auction name is invalid or already taken.<p>\n";
    print "Please hit the BACK button to return to the<br>\n";
    print "Create a New Auction Page.<p>\n";
    &html_trailer;
    exit;
}

if ($newauction numbonds==0) {
    &html_header("Invalid Number of Bond Issues", 2);
    print "<p>Sorry, you must enter a valid number of bond issues.<p>\n";
    print "Please hit the BACK button to return to the<br>\n";
    print "Create a New Auction Page.<p>\n";
    &html_trailer;
    exit;
}
$newauction_info =~ s/\n/\\<br>/g;
$newauction_info =~ s/\r//g;

&html_header("AUCTION ADMINISTRATION", 1);
print <<EOI;
<input type="hidden" name="auction_name" value="$auction_name">
<input type="hidden" name="info" value="yes">
<input type="hidden" name="nos" value="yes">
<input type="hidden" name="pos" value="yes">
<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="$combo">
<input type="hidden" name="corporation" value="$corporation">
<input type="hidden" name="id" value="$id">
<input type="hidden" name="password" value="$password">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
<h2><center>Enter $newauction numbonds Bond Issues
for Auction $newauction_name</center></h2>
<hr><center>
<b>Settlement Date:</b> $settlement_month $settlement_day, $settlement_year
<br><b>Issue Date:</b> $issue_month $issue_day, $issue_year
<br><b>Date of first interest payment:</b> $firstPay_month $firstPay_day
$firstPay_year
<p>$newauction_info
</center><hr><p>
<input type=hidden name="newauction_startmonth" value="$newauction_startmonth">
<input type=hidden name="newauction_startday" value="$newauction_startday">

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<input type=hidden name="newauction_startyear" value="$newauction_startyear">
<input type=hidden name="newauction_starthour" value="$newauction_starthour">
<input type=hidden name="newauction_startmin" value="$newauction_startmin">
<input type=hidden name="newauction_endhour" value="$newauction_endhour">
<input type=hidden name="newauction_endmin" value="$newauction_endmin">
<input type=hidden name="newauction_name" value="$newauction_name">
<input type=hidden name="settlement_day" value="$settlement_day">
<input type=hidden name="settlement_month" value="$settlement_month">
<input type=hidden name="settlement_year" value="$settlement_year">
<input type=hidden name="issue_day" value="$issue_day">
<input type=hidden name="issue_month" value="$issue_month">
<input type=hidden name="issue_year" value="$issue_year">
<input type=hidden name="firstPay_day" value="$firstPay_day">
<input type=hidden name="firstPay_month" value="$firstPay_month">
<input type=hidden name="firstPay_year" value="$firstPay_year">
<input type=hidden name="newauction_info" value="$newauction_info">
<input type=hidden name="newauction numbonds" value="$newauction_numbonds">
EOI
for ($i=0; $i < $newauction_numbonds; $i++) {
    print "<table border=0 cellspacing=0 cellpadding=0>\n";
print <<EOI;
<tr><td><b>Maturity Date: </b><td>
<select name="newauction_month$i">
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
<option>December
</select>
Day:
<input name="newauction_day$i" size=2 maxlength=2>
Year:
<input name="newauction_year$i" size=4 maxlength=4>
EOI
    print "<tr><td><b>Principal: </b><td><input name=\"newauction_price$i\">\n";
    print "</table><p>\n";
}
print <<EOI;
<p>
<input type=submit name=createnow value="Create New Auction Now">
EOI
}

if ($createnow ne "") {

#check for unique auction name
open (NAMES, "$htdocs2/names.txt") || die "Couldn't open
names.txt\n";
$which="junk";
$uniquename="yes";
while ($which ne "") {
    chop ($which=<NAMES>);
    if ($which eq $newauction_name) {

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        $uniquename="no";
    }
}
close (NAMES);

# take out spaces in new auction name
$good_name=$newauction_name;
$good_name =~ s/\s//g;
$good_name =~ s/\&/g;
$good_name =~ s/\*/g;
$good_name =~ s/\(/g;
$good_name =~ s/\)/g;
$good_name =~ s/\$/g;
$good_name =~ s/\!//g;
$good_name =~ s/\|//g;
$good_name =~ s/\//g;
$good_name =~ s/\~//g;
$good_name =~ s/\^//g;
$good_name =~ s/\`//g;
$good_name =~ s/\"/g;
$good_name =~ s/\<//g;
$good_name =~ s/\>//g;
$good_name =~ s/\?//g;

if ($uniquename eq "no" || $newauction_name ne $good_name) {
    &html_header("Invalid Auction Name");
    print "<p>Sorry, that auction name is invalid or already taken.<p>\n";
    print "Please hit the BACK button to return to the\n";
    print "Create a New Auction Page.<p>\n";
    &html_trailer;
    exit;
}

for ($i=0; $i < $newauction_numbonds; $i++) {
    $newauction_monthname[$i] = "newauction_month$i";
    $newauction_dayname[$i] = "newauction_day$i";
    $newauction_yearname[$i] = "newauction_year$i";
    $newauction_pricename[$i] = "newauction_price$i";
}
for ($i=0; $i < $newauction_numbonds; $i++) {
    $newauction_month[$i] = $rqpairs{$newauction_monthname[$i]};
    $newauction_day[$i] = $rqpairs{$newauction_dayname[$i]};
    $newauction_year[$i] = $rqpairs{$newauction_yearname[$i]};
    $newauction_price[$i] = $rqpairs{$newauction_pricename[$i]};
}

system("mkdir $htdocs2/$newauction_name");
system("cp $templates/bestrateslock.txt $htdocs2/$newauction_name/");
system("cp $templates/bidloglock.txt $htdocs2/$newauction_name/");

open (NEWRATES, ">$htdocs2/$newauction_name/bestrates.txt") || die
"Couldn't
    create bestrates.txt\n";
    for ($i=0; $i < $newauction_numbonds; $i++) {
        print NEWRATES "\n\nn999.99900\n999.99900\n999.99900\n";
    }

open (NEWAUCTION, ">$htdocs2/$newauction_name/auction.txt") || die "Couldn't
    create auction.txt\n";
    print NEWAUCTION "$newauction_startmonth\n$newauction_startday\n";

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print NEWAUCTION "$newauction_startyear\n$newauction_starthour\n";
print NEWAUCTION "$newauction_startmin\n$newauction_endhour\n";
print NEWAUCTION "$newauction_endmin\n";
print NEWAUCTION "$settlement_month\n$settlement_day\n$settlement_year\n";
print NEWAUCTION "$issue_month\n$issue_day\n$issue_year\n";
print NEWAUCTION "$firstPay_month\n$firstPay_day\n$firstPay_year\n";
print NEWAUCTION "$newauction_info\n$newauction_numbonds\n";
for ($i=0; $i < $newauction_numbonds; $i++) {
    print NEWAUCTION "$newauction_month[$i]\n$newauction_day[$i]\n";
    print NEWAUCTION "$newauction_year[$i]\n$newauction_price[$i]\n";
}
close(NEWAUCTION);

open (NAMES, ">$htdocs2/names.txt") || die "Couldn't append names.txt\n";
print NAMES "$newauction_name\n";
close(NAMES);

open (NEW_LOG, ">$htdocs2/$newauction_name/bidlog.txt") || die "Couldn't
    create bidlog.txt\n";
close(NEW_LOG);
&html_header("AUCTION ADMINISTRATION",0);
print "<p><center><h1>Auction $newauction_name Created</h1></center><p>";
}

# administrative option: modify an existing auction

if ($modify_auction ne "") {

open (MODIFYAUCTION, "$htdocs2/$auction_name/auction.txt") || die "Couldn't
    open auction.txt for reading\n";
chop($newauction_startmonth=<MODIFYAUCTION>);
chop($newauction_startday=<MODIFYAUCTION>);
chop($newauction_startyear=<MODIFYAUCTION>);
chop($newauction_starthour=<MODIFYAUCTION>);
chop($newauction_startmin=<MODIFYAUCTION>);
chop($newauction_endhour=<MODIFYAUCTION>);
chop($newauction_endmin=<MODIFYAUCTION>);
chop($settlement_month=<MODIFYAUCTION>);
chop($settlement_day=<MODIFYAUCTION>);
chop($settlement_year=<MODIFYAUCTION>);
chop($issue_month=<MODIFYAUCTION>);
chop($issue_day=<MODIFYAUCTION>);
chop($issue_year=<MODIFYAUCTION>);
chop($firstPay_month=<MODIFYAUCTION>);
chop($firstPay_day=<MODIFYAUCTION>);
chop($firstPay_year=<MODIFYAUCTION>);
chop($newauction_info=<MODIFYAUCTION>);
chop($newauction_numbonds=<MODIFYAUCTION>);
for ($i=0; $i < $newauction_numbonds; $i++) {
    chop($newauction_month[$i]=<MODIFYAUCTION>);
    chop($newauction_day[$i]=<MODIFYAUCTION>);
    chop($newauction_year[$i]=<MODIFYAUCTION>);
    chop($newauction_price[$i]=<MODIFYAUCTION>);
}
close(MODIFYAUCTION);

&html_header("AUCTION ADMINISTRATION",1);
print "<input type='hidden' name='auction_name' value='$auction_name'>

```

```

        :
<input type="hidden" name="info" value="yes">
<input type="hidden" name="nos" value="yes">
<input type="hidden" name="pos" value="yes">
<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="$combo">
<input type="hidden" name="corporation" value="$corporation">
<input type="hidden" name="id" value="$id">
<input type="hidden" name="password" value="$password">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
EOI

for ($i=0; $i < $newauction_numbonds; $i++) {
    print <<EOI;
<input type=hidden name="newauction_month$i" value="$newauction_month[$i]">
<input type=hidden name="newauction_day$i" value="$newauction_day[$i]">
<input type=hidden name="newauction_year$i" value="$newauction_year[$i]">
<input type=hidden name="newauction_price$i" value="$newauction_price[$i]">
EOI
}

$newauction_info=~ s/>\n<br>/\n/g;

print <<EOI;
<h2><center>Modify Auction $auction_name</center></h2>

<strong>Date of Auction:</strong><br>
Month:
<select name="newauction_startmonth">
<option selected>$newauction_startmonth
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
<option>December
</select>
Day:
<input name="newauction_startday" value="$newauction_startday" size=2
maxlength=2>
Year:
<input name="newauction_startyear" value="$newauction_startyear" size=4
maxlength=4><br>
Start time:
<input name="newauction_starthour" value="$newauction_starthour" size=2
maxlength=2>;
<input name="newauction_startmin" value="$newauction_startmin" size=2
maxlength=2>
End time:
<input name="newauction_endhour" value="$newauction_endhour" size=2
maxlength=2>;
<input name="newauction_endmin" value="$newauction_endmin" size=2
maxlength=2>
<p>

```

```
<strong>Settlement date:</strong><br>
Month:
<select name="settlement_month">
<option selected>$settlement_month
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
<option>December
</select>
Day:
<input name="settlement_day" value="$settlement_day" size=2 maxlength=2>
Year:
<input name="settlement_year" value="$settlement_year" size=4 maxlength=4><p>

<strong>Dated (issue) date:</strong><br>
Month:
<select name="issue_month">
<option selected>$issue_month
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
<option>December
</select>

Day:
<input name="issue_day" value="$issue_day" size=2 maxlength=2>
Year:
<input name="issue_year" value="$issue_year" size=4 maxlength=4><p>

<strong>Date of first interest payment:</strong><br>
Month:
<select name="firstPay_month">
<option selected>$firstPay_month
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
```

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<option>December
</select>

Day:
<input name="firstPay_day" value="$firstPay_day" size=2 maxlength=2>
Year:
<input name="firstPay_year" value="$firstPay_year" size=4 maxlength=4><p>
<b>Number of bonds to be offered:</b>
<input name="newauction_numbonds" value="$newauction_numbonds" size=2
maxlength=2>
<p>
<b>Auction name: </b><input name="newauction_name" value="$auction_name"><p>
<b>Auction info:</b><br>
<textarea name="newauction_info" rows=5 cols=60>$newauction_info</textarea>
<p><input type=submit name=modify_bonds value="Modify bond issues">

EOI
}

if ($modify_bonds ne "") {

    for ($i=0; $i < $newauction_numbonds; $i++) {
        $newauction_monthName[$i] = "newauction_month$i";
        $newauction_dayName[$i] = "newauction_day$i";
        $newauction_yearName[$i] = "newauction_year$i";
        $newauction_priceName[$i] = "newauction_price$i";
    }

    for ($i=0; $i < $newauction_numbonds; $i++) {
        $newauction_month[$i] = $rqpairs{$newauction_monthName[$i]};
        $newauction_day[$i] = $rqpairs{$newauction_dayName[$i]};
        $newauction_year[$i] = $rqpairs{$newauction_yearName[$i]};
        $newauction_price[$i] = $rqpairs{$newauction_priceName[$i]};
    }

    # take out spaces in new auction name
    $good_name = $newauction_name;
    $good_name =~ s/\s//g;
    $good_name =~ s/\&//g;
    $good_name =~ s/\*///g;
    $good_name =~ s/\//g;
    $good_name =~ s/\)//g;
    $good_name =~ s/\$/g;
    $good_name =~ s/\!//g;
    $good_name =~ s/\|//g;
    $good_name =~ s/\||//g;
    $good_name =~ s/\|\|//g;
    $good_name =~ s/\|\|\|//g;
    $good_name =~ s/\^\|//g;
    $good_name =~ s/\|^|//g;
    $good_name =~ s/\^"/g;
    $good_name =~ s/\|^<|//g;
    $good_name =~ s/\|^>|//g;
    $good_name =~ s/\|^?|//g;

    if ($good_name ne $newauction_name) {
        &html_header("Invalid Auction Name",2);
        print "<p>Sorry, that auction name is invalid.<p>\n";
        print "Please hit the BACK button to return to the\n";
        print "Modify Auction Page.<p>\n";
    }
}

```

```

    &html_trailer;
    exit;
}

if ($newauction_numbonds==0) {
    &html_header("Invalid Number of Bond Issues",2);
    print "<p>Sorry, you must enter a valid number of bond issues.<p>\n";
    print "Please hit the BACK button to return to the\n";
    print "Modify Auction Page.<p>\n";
    &html_trailer;
    exit;
}
$newauction_info =~ s/\n/\<br\>/g;
$newauction_info =~ s/\r//g;

&html_header("AUCTION ADMINISTRATION",1);
print <<EOI;
<input type="hidden" name="auction_name" value="$auction_name">
<input type="hidden" name="info" value="yes">
<input type="hidden" name="nos" value="yes">
<input type="hidden" name="pos" value="yes">
<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="$combo">
<input type="hidden" name="corporation" value="$corporation">
<input type="hidden" name="id" value="$id">
<input type="hidden" name="password" value="$password">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
<h2><center>Enter $newauction_numbonds Bond Issues
for Auction $newauction_name</center></h2>
<hr><center>
<b>Settlement Date:</b> $settlement_month $settlement_day, $settlement_year
<br><b>Issue Date:</b> $issue_month $issue_day, $issue_year
<br><b>Date of first interest payment:</b> $firstPay_month $firstPay_day,
$firstPay_year
<p>$newauction_info
</center><hr><p>
<input type=hidden name="newauction_startmonth" value="$newauction_startmonth">
<input type=hidden name="newauction_startday" value="$newauction_startday">
<input type=hidden name="newauction_startyear" value="$newauction_startyear">
<input type=hidden name="newauction_starthour" value="$newauction_starthour">
<input type=hidden name="newauction_startmin" value="$newauction_startmin">
<input type=hidden name="newauction_endhour" value="$newauction_endhour">
<input type=hidden name="newauction_endmin" value="$newauction_endmin">
<input type=hidden name="newauction_name" value="$newauction_name">
<input type=hidden name="settlement_day" value="$settlement_day">
<input type=hidden name="settlement_month" value="$settlement_month">
<input type=hidden name="settlement_year" value="$settlement_year">
<input type=hidden name="issue_month" value="$issue_month">
<input type=hidden name="issue_day" value="$issue_day">
<input type=hidden name="issue_year" value="$issue_year">
<input type=hidden name="firstPay_month" value="$firstPay_month">
<input type=hidden name="firstPay_day" value="$firstPay_day">
<input type=hidden name="firstPay_year" value="$firstPay_year">
<input type=hidden name="newauction_info" value="$newauction_info">
<input type=hidden name="newauction_numbonds" value="$newauction_numbonds">
EOI
for ($i=0; $i < $newauction_numbonds; $i++) {
    print "<table border=0 cellspacing=0 cellpadding=0>\n";
print <<EOI;

```

```

<tr><td><b>Maturity Date: </b><td>
<select name="newauction_month$i">
<option selected>$newauction_month[$i]
<option>January
<option>February
<option>March
<option>April
<option>May
<option>June
<option>July
<option>August
<option>September
<option>October
<option>November
<option>December
</select>
Day:
<input name="newauction_day$i" value="$newauction_day[$i]" size=2 maxlength=2>
Year:
<input name="newauction_year$i" value="$newauction_year[$i]" size=4
maxlength=4>
EOI
print "<tr><td><b>Principal: </b><td><input name=\"newauction_price$i\""
value=\"$newauction_price[$i]\"\n";
print "</table><p>\n";
}
print <<EOI;
<p>
<input type=submit name=modify_now value="Modify Auction Now">
EOI
}

if ($modify_now ne "") {
    for ($i=0; $i < $newauction_numbonds; $i++) {
        $newauction_monthname[$i] = "newauction_month$i";
        $newauction_dayname[$i] = "newauction_day$i";
        $newauction_yearname[$i] = "newauction_year$i";
        $newauction_pricename[$i] = "newauction_price$i";
    }
    for ($i=0; $i < $newauction_numbonds; $i++) {
        $newauction_month[$i] = $rqpairs{$newauction_monthname[$i]};
        $newauction_day[$i] = $rqpairs{$newauction_dayname[$i]};
        $newauction_year[$i] = $rqpairs{$newauction_yearname[$i]};
        $newauction_price[$i] = $rqpairs{$newauction_pricename[$i]};
    }
}

open (MODIFIED_AUCTION, ">$htdocs2/$newauction_name/auction.txt") || die
"Couldn't modify auction.txt\n";
print MODIFIED_AUCTION "$newauction_startmonth\n$newauction_startday\n";
print MODIFIED_AUCTION "$newauction_startyear\n$newauction_starthour\n";
print MODIFIED_AUCTION "$newauction_startmin\n$newauction_endhour\n";
print MODIFIED_AUCTION "$newauction_endmin\n";
print MODIFIED_AUCTION "$settlement_month\n$newauction_settlement_day\n";
print MODIFIED_AUCTION "settlement_year\n";
print MODIFIED_AUCTION "$issue_month\n$issue_day\n$issue_year\n";
print MODIFIED_AUCTION "$firstPay_month\n$firstPay_day\n$firstPay_year\n";
print MODIFIED_AUCTION "$newauction_info\n$newauction_numbonds\n";
for ($i=0; $i < $newauction_numbonds; $i++) {
    print MODIFIED_AUCTION "$newauction_month[$i]\n$newauction_day[$i]\n";
}

```

```

    print MODIFIED_AUCTION "$newauction_year[$i]\n$newauction_price[$i]\n";
}
close(MODIFIED_AUCTION);

&html_header("AUCTION ADMINISTRATION",0);
print "<p><center><h1>Auction $auction_name Modified</h1></center><p>";
}

#administrative option: list registrants
if ($listfirms ne "") {
    &html_header("AUCTION ADMINISTRATION",0);
    open (FIRMS, "$htdocs2/bondid.txt") || die "Couldn't open bondid.txt to
        list firms\n";
    $firmid="junk";
    $i=0;
    while ($firmid ne "") {
        $i++;
        chop($firmid=<FIRMS>);
        chop($firmemail=<FIRMS>);
        chop($firmname=<FIRMS>);
        chop($firmabbrev=<FIRMS>);
        chop($firmaddress=<FIRMS>);
        if ($i==1) {
            if ($firmid ne "") {
                print "<h1><center>Current Auction Registrants</center></h1>\n";
                print "<table border=0 cellspacing=5 cellpadding=5>\n";
                print "<tr><th>ID Number<th>Firm<th>Abbreviation<th>Address\n";
            }
            else {
                print "<h2>There are no current Auction Registrants.</h2>\n";
            }
        }
        if ($firmid ne "") {
            print "<tr><td>$firmid<td>$firmname<td>$firmabbrev\n";
            print "<td>$firmaddress\n";
        }
    }
    close(FIRMS);
    print "</table>\n";
}

#administrative option: remove a bidder
if ($removeOne ne "") {
    &html_header("AUCTION ADMINISTRATION",1);
    print "<><EOI>;
<input type="hidden" name="auction_name" value="$auction_name">
<input type="hidden" name="info" value="yes">
<input type="hidden" name="nos" value="yes">
<input type="hidden" name="pos" value="yes">
<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="$combo">
<input type="hidden" name="corporation" value="$corporation">
<input type="hidden" name="id" value="$id">
<input type="hidden" name="password" value="$password">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
EOI
    print "<h1><center>Remove a Bidder</center></h1>\n";
    print "Enter the ID number of the bidder you plan to remove:<p>\n";
    print "<input name=toBeRemoved><p>";
```

```

        print "<input type=submit name=removeNow value=\"Remove Bidder\">\n";
    }

    if ($removeNow ne "" || ($toBeRemoved ne "" && $removeYes eq ""))
    {
        open (FIRMS, "$htdocs2/bondid.txt") || die "Couldn't open bondid.txt to
        list firms\n";
        $numfirms=1;
        $firm_id[0] = "junk";
        while ($firm_id[$numfirms-1] ne "") {
            chop($firm_id[$numfirms-1] =~ <FIRMS>);
            chop($firm_email[$numfirms-1] =~ <FIRMS>);
            chop($firm_name[$numfirms-1] =~ <FIRMS>);
            chop($firm_abbrev[$numfirms-1] =~ <FIRMS>);
            chop($firm_address[$numfirms-1] =~ <FIRMS>);
            $numfirms++;
        }
        if ($firm_id[$numfirms-1] ne "" && $firm_id[$numfirms-1] eq $toBeRemoved) {
            $doesexist="yes";
            &html_header("AUCTION ADMINISTRATION",1);
            print <<EOI;
<input type="hidden" name="auction_name" value="$auction_name">
<input type="hidden" name="info" value="yes">
<input type="hidden" name="nos" value="yes">
<input type="hidden" name="pos" value="yes">
<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="$combo">
<input type="hidden" name="corporation" value="$corporation">
<input type="hidden" name="id" value="$id">
<input type="hidden" name="password" value="$password">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
EOI
        print "<h2><center>Are you sure you want to remove $toBeRemoved\n";
        print "from all Auctions?</h2></center>\n";
        print "<table border=0 cellspacing=5 cellpadding=5>\n";
        print "<tr><th>ID Number<th>Firm<th>Abbreviation<th>Address\n";
        $whichToGo=$numfirms-1;
        print "<tr><td>$firm_id[$numfirms-1]<td>$firm_name[$numfirms-1]\n";
        print "<td>$firm_abbrev[$numfirms-1]\n";
        print "<td>$firm_address[$numfirms-1]\n";
    }
    close(FIRMS);
    print "</table>\n";
    if ($doesexist ne "yes") {
        &html_header("No such bidder",2);
        print "<h2>The bidder \"$toBeRemoved\" does not exist.</h2>\n";
    }
    else {
        for ($i=0; $i < $numfirms; $i++) {

            print "<input type=hidden name=firm_id[$i] value=\"$firm_id[$i]\">\n";
            print "<input type=hidden name=firm_name[$i] value=\"$firm_name[$i]\">\n";
            print "<input type=hidden name=firm_abbrev[$i] value=\"$firm_abbrev[$i]\">\n";
            print "<input type=hidden name=firm_address[$i] value=\"$firm_address[$i]\">\n";
        }

        print "<input type=hidden name=toBeRemoved value=$toBeRemoved>\n";
        print "<input type=hidden name=whichToGo value=$whichToGo>\n";
        print "<input type=hidden name=numfirms value=$numfirms>\n";
        print "<input type=submit name=removeYes ";
    }
}

```

```

    print "value=\"Yes, Remove this Bidder\">\n";
}
print "<p>\n</form>\n";
}

if ($removeYes ne "") {
    open (AUCTIONS, "$htdocs2/names.txt") || die "Couldn't open names.txt\n";
    $i=1;
    $maxNumber=0;
    $auctions[0]="junk";
    while ($auctions[$i-1] ne "") {
        chop($auctions[$i]<AUCTIONS>);
        $maxNumber++;
        $i++;
    }
    close(AUCTIONS);
    for ($i=1; $i<$maxNumber; $i++) {
        system("rm $htdocs2/$auctions[$i]/$toBeRemoved.txt");
    }

    for ($i=0;$i<($numfirms-2); $i++) {
        print "$firm_id[$i+1]<br>\n";
        print "$firm_name[$i+1]<br>\n";
        print "$firm_abbrev[$i+1]<br>\n";
        print "$firm_address[$i+1]<br>\n";
    }

    open (ID, ">$htdocs2/bondid.txt") || die "Couldn't overwrite bondid.txt\n";
    for ($i=0;$i<($numfirms-2); $i++) {
        if ($whichToGo != ($i+1)) {
            print ID "$firm_id[$i+1]\n";
            print ID "$firm_email[$i+1]\n";
            print ID "$firm_name[$i+1]\n";
            print ID "$firm_abbrev[$i+1]\n";
            print ID "$firm_address[$i+1]\n";
        }
    }
    close(ID);
    &html_header("AUCTION ADMINISTRATION",0);
    print "<h2><center>$toBeRemoved was Successfully Removed.</center></h2>\n";
}

#administrative option: remove all bidders
if ($removeAll ne "") {
    &html_header("AUCTION ADMINISTRATION",1);
    print <<EOI;
<input type="hidden" name="auction_name" value="$auction_name">
<input type="hidden" name="info" value="yes">
<input type="hidden" name="nos" value="yes">
<input type="hidden" name="pos" value="yes">
<input type="hidden" name="rules" value="yes">
<input type="hidden" name="combo" value="$combo">
<input type="hidden" name="corporation" value="$corporation">
<input type="hidden" name="id" value="$id">
<input type="hidden" name="password" value="$password">
<input type="hidden" name="variable" value="junk">
<input type="hidden" name="variable2" value="junk">
EOI
    print "<h1><center>Are you sure you want to remove all bidders from\n";
    print "the Auctions?</center></h1>\n";
}

```

```

print "<input type=submit name=removeAllNow value=\"Remove All Bidders\">\n";
print "</form>\n";
}

if ($removeAllNow ne "") {
    open (ID, ">$htdocs2/bondid.txt") || die "Couldn't read bondid.txt\n";
    $temp_id="junk";
    while ($temp_id ne "") {
        chop($temp_id=<ID>);
        chop($temp_junk=<ID>);
        chop($temp_junk=<ID>);
        chop($temp_junk=<ID>);
        chop($temp_junk=<ID>);
        open (AUCTIONS, "$htdocs2/names.txt") || die "Couldn't open names.txt\n";
        $i=1;
        $maxNumber=0;
        $auctions[0]="junk";
        while ($auctions[$i-1] ne "") {
            chop($auctions[$i]=<AUCTIONS>);
            $maxNumber++;
            $i++;
        }
        close(AUCTIONS);
        for ($i=1; $i<$maxNumber; $i++) {
            unless ($temp_id eq "") {
                system("rm $htdocs2/$auctions[$i]/$temp_id.txt");
            }
        }
    }
    open (ID, ">$htdocs2/bondid.txt") || die "Couldn't clear bondid.txt\n";
    close(ID);
    &html_header("AUCTION ADMINISTRATION",0);
    print "<h2><center>All Bidders Have Been Removed</center></h2>\n";
}

&html_trailer;
exit;

sub round {
    local($number) = @_;
    $roundednumber=1000.*$number+.5;
    $roundednumber=int($roundednumber)/1000.;
    return $roundednumber;
}

sub commas {
    local ($_)=@_;
    1 while
    s/(.*\d)(\d\d\d)/$1,$2/;
    $_;
}

sub get_request {

    if ($ENV{'REQUEST_METHOD'} eq "POST") {
        read(STDIN, $request, $ENV{'CONTENT_LENGTH'});
    }
    else
    {
}

```

```

        print "Location: http://$server_name/ma/index2.html\n\n";
        exit;
    }
}

%rqpairs = &url_decode(split(/[\&]/, $request));
}

sub url_decode {
#      Decode a URL encoded string or array of strings
#      + -> space
#      %xx -> character xx

    foreach (@_) {
        tr/+/ /;
        s/%(..)/pack("c",hex($1))/ge;
    }
    @_;
}

sub html_header {
    # Subroutine html_header sends to Standard Output the necessary
    # material to form an HTML header for the document to be
    # returned, the single argument is the TITLE field.

    local($title,$form) = @_;
    $global_form=$form;

    print "Content-type: text/html\n\n";
    print "<html><head>\n";
    if ($id ne $observer_id && $id ne $admin_id && $variable2 ne "") {
    }
        print "<title>$title</title></head>\n";
        print "<body bgcolor=\"#ffffff\" link=\"#970000\" vlink=\"#970000\">\n";
    if ($form==2) {
        print "<img src=http://$server_name/ma/images/ERRORHD.GIF>\n";
    }
    elsif ($variable eq "") {
        print "<img src=http://$server_name/ma/images/REGHEAD.GIF>\n";
    }
    elsif ($id eq $observer_id) {
        print "<img src=http://$server_name/ma/images/OBSRVHED.GIF>\n";
    }
    elsif ($id eq $admin_id) {
        if ($variable3 eq "") {
            print "<img src=http://$server_name/ma/images/ADMNTNH.D.GIF>\n";
        }
        else {
            print "<img src=http://$server_name/ma/images/ADMNTRHD.GIF>\n";
        }
    }
    elsif ($id ne $observer_id && $id ne $admin_id && $variable2 ne "") {
        print "<img src=http://$server_name/ma/images/AUCTHEAD.GIF>\n";
    }
    elsif ($documents ne "") {
    }
    else {
        print "<img src=http://$server_name/ma/images/VERIFYHD.GIF>\n";
    }
}

```

```

if ($title =~ /PROPOSAL/ || $view ne "" || $id eq $observer_id) {
    use Time::Local;
    for ($i=0; $i<12; $i++) {
        if ($auction_startmonth eq $longmonths[$i]) {
            $auc_startmonth=$i;
        }
    }
    $auc_startyear=$auction_startyear-1900;

    $a_time=timelocal(0,0,0,$auction_startday,$auc_startmonth,$auc_startyear);
    ($a_sec, $a_min, $a_hour, $a_mday, $a_mon, $a_year, $a_wday, $a_yday,
     $a_isdst)=localtime($a_time);

    $weekday=$longdays[$a_wday];

    ($sec,$min,$hour,$mday,$mon,$year,$wday,$yday,$isdst)=localtime(time);
    if ($hour >= $auction_starthour && $hour < $auction_endhour && $min < 60) {
        $minleft = 60*($auction_endhour - $hour) + $auction_endmin - $min;
        $min = 60*($hour - $auction_starthour) + $min - $auction_startmin - 1;
        $secleft = 60 - $sec;
    }
    elsif ($hour >= $auction_starthour && hour == $auction_endhour && min<60) {
        if ($min < $auction_endmin) {
            $minleft = $auction_endmin - $min;
            $min = 60*($hour-$auction_starthour) + $min - $auction_startmin - 1;
            $secleft = 60 - $sec;
        }
        else {
            $minleft="0";
            $secleft="0";
        }
    }
    else {
        $minleft="0";
        $secleft="0";
    }
    if ($min < 10) {
        $min = "0$min";
    }
    if ($minleft < 10) {
        $minleft = "0$minleft";
    }
    if ($sec<10) {
        $sec = "0$sec";
    }
    if ($secleft < 10) {
        $secleft = "0$secleft";
    }
} # end of if ($title=~"/PROPOSAL")

if ($title =~ /PROPOSAL/ || $view ne "" || $id eq $observer_id) {

# abbreviate month and weekday
for ($i=0; $i<12; $i++) {
    if ($auc_startmonth == $i) {
        $auction_startmonth=$shortmonths[$i];
    }
}

```

```

for ($i=0; $i<12; $i++) {
    if ($a_wday == $i) {
        $weekday=$shortdays[$i];
    }
}

# change to non-military time
if ($auction_starthour > 11) {
    if ($auction_starthour > 12) {
        $auction_starthour=$auction_starthour-12;
    }
}
$auction_startmin="$auction_startmin pm";
}
else {
$auction_startmin="$auction_startmin am";
}
if ($auction_endhour > 11) {
    if ($auction_endhour > 12) {
        $auction_endhour=$auction_endhour-12;
    }
}
$auction_endmin="$auction_endmin pm";
}
else {
$auction_endmin="$auction_endmin am";
}
if ($hour > 11) {
    if ($hour > 12) {
        $hour=$hour-12;
    }
    else {}
}
$sec="$sec pm"
}
else {
$sec="$sec am"
}
print <<EOI;
<pre><center>
Auction Date: $weekday $auction_startmonth $auction_startday,
$auction_startyear Start: $auction_starthour:$auction_startmin End:
$auction_endhour:$auction_endmin Time Now: $hour:$min:$sec
</center>
</pre>
EOI
}

# print out form header if a form is expected

if ($form==1) {
print <<EOI;
<form name="form_name"
method="POST" action="http://$server_name/cgi-bin/ma/bond.pl">
EOI
}

sub html_trailer {
    if ($global_form == 2 && $id ne $admin_id) {
        print <<EOI;
<p><hr>

```

```
<table border=0 cellspacing=0 cellpadding=0>
<tr><td>Go to: <a href="http://$server_name/ma/$auction_name/nos.html">
Notice Of Sale</a>,
<a href="http://$server_name/ma/$auction_name/pos.html">Preliminary Official
Statement</a>,
<a href="http://$server_name/ma/rules.html">Rules of MuniAuction</a>,
<a href="http://$server_name/ma/index2.html">MuniAuction Homepage</a>
EOI
}
if ($id eq $admin_id || $id eq $observer_id) {
    if ($view eq "") {
        print "<p>\n";
        print "Go to: <a href=\"http://$server_name/ma/index2.html\">\n";
        print "MuniAuction Home Page</a>\n";
    }
}
else {
    if ($variable eq "") {
        print "<table>\n";
    }
    else {
        print "<br>\n";
        print "<tr><td>Exit to: \n";
        print "<td><a href=\"http://$server_name/ma/index2.html\">";
        print "MuniAuction Home Page</a>\n";
    }
}
unless (($id eq $admin_id && $view eq "" && $global_form!=2) ||
$id eq $observer_id && $global_form!=2) {
    print "</table>\n";
}
print "<hr>\n";
print "<address>Please direct questions and comments to ";
print "<a href=\"mailto:Administrator@MuniAuction.com\">";
print "Administrator@MuniAuction.com</a><br>\n";
print "</address>\n";
print "<img src=\"http://$server_name/ma/images/REGFOOT.GIF\"";
print " alt=\"MuniAuction\"";
print "</body></html>\n";
}
```

ATTACHMENT A: TIC CALCULATION CODE

```
#  
#now compute TIC  
#Set up semi-annual debt service table  
#  
  
$coupon_payments=$ncoupons[$numbonds-1];  
  
for ($i=0; $i < $numbonds; $i++) {  
  
    $r=$interest[$i]/100.;  
  
    $sads[1]=$sads[1]+$principal[$i]*$r*$fcp_days/180/2;  
  
    for ($j=2; $j < $ncoupons[$i]+1; $j++){  
        $sads[$j]=$sads[$j]+$principal[$i]*$r/2;  
    }  
    $sads[$ncoupons[$i]]=$sads[$ncoupons[$i]]+$principal[$i];  
}  
  
#  
# set up time discount factors  
#  
$tfact=$tf_days/180.;  
$acc_interest=$sads[1]*$a/$fc Days;  
$p=$proceeds+$acc_interest;  
#  
# initialize TIC  
#  
$tic=.04;  
  
$sum=0;  
  
for ($k=1; $k < $coupon_payments+1; $k++) {  
    $sum=$sum+$sads[$k]/((1+($tic/2))**($k-1+$tfact));  
}  
  
# now iterate to find tic such that sum=p  
  
while (abs($p-$sum) > 0.0001) {  
  
    $tic=$tic*$sum/$p;  
  
    $sum=0;
```

```
for ($k=1; $k < $coupon_payments+1; $k++) {  
    $sum=$sum+$sads[$k]/((1+($tic/2))**($k-1+$tfact));  
}  
#end while
```

POSITION	ID NO.	DATE
CLASSIFIER		
EXAMINER	343	8-18-97
TYPIST	"	" "
VERIFIER	"	" "
CORPS CORR.		
SPEC. HAND		
FILE MAINT		
DRAFTING		

(LEFT INSIDE)